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TRANSACTIONS

OF THE

HISTORIC SOCIETY

OF

LANCASHIRE AND CHESHIRE

VOLUME VIII.

SESSION 1855-56.

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Of the Sixteen illustrations contained in this volume, only eight have been produced wholly at the cost of the Society. These are I, IV, V, VI, VII, VIII, IX, X.

Nos. II and III were presented complete, by Mr. Marsh, in illustration of his own paper.

No. XVI was in like manner presented complete, by the Rev. John James Moss, M.A., in illustration of his own remarks on Watches.

The use of the Plates XI, XII, XIII, XIV and XV was granted by the British Association for the Advancement of Science, through Professor Phillips. The use of the standing forms, for printing the Tables to which these plates refer, was granted in like manner by the British Association. (*See page* 212.)

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ON THE STATE OF THE WESTERN PORTION OF THE ANCIENT KINGDOM OF NORTHUMBERLAND, DOWN TO THE PERIOD OF THE NORMAN CONQUEST.

By John Hodgson Hinde, Esq.

(Read on the 3rd and 17th of January, 1856.)

The kingdom of Northumberland, in its integrity, comprised the entire district which lies between the Mersey and the Humber to the South, and the Friths of Clyde and Forth to the North. The Northern limits have never been disputed, and, although Dr. Whitaker has suggested that the Ribble, rather than the Mersey, formed its South-western boundary, we have on the other side the unquestionable testimony of the Saxon Chronicle, that Manchester, seated on the latter river, was subject to the Northumbrian kings, not only during the early preponderance of that state, but almost to the close of its existence, a century after the other members of the Heptarchy were absorbed in the monarchy of Egbert. "In the year 923," we read that "King Edward commanded a body of Mercians to take possession of Manchester, *in Northumberland*, and to repair and occupy it." To the South-east, the Humber furnished both a limit and a name to this extensive territory.

If history had been altogether silent, the nomenclature of the district would of itself afford sufficient evidence that a people speaking a language radically different from the Saxon, were its earliest colonists. It is true, that in the names of the towns and villages, we generally find indications of an Anglo-Saxon etymology, and such we should expect to be the case from our experience in all parallel instances. Wherever a new people settle, they invariably give, to their acquired abodes, names which are significant in their own language; and the more complete the extermination or subjection of their predecessors, the more universal the change of topographical

designation. It extends, indeed, not merely to the hamlets which they occupy, but to the fields which they till, and to the hill-sides where their flocks are depastured. If we go beyond this, and inquire amongst the rugged mountains, the crags, the caverns, and, above all, the rivers, we invariably meet with traces of the earlier inhabitants. Throughout the ancient limits of Northumbria, whilst the towns and villages remind us of the Anglo-Saxon settlement, or the more recent domination of the Danes, the rivers and bolder features of the country reveal, in their names, the antient haunts of a Celtic people. If, in other districts of Britain, the traces of this primæval race are faint or uncertain (which, however, I must not be understood to affirm), the case is far otherwise here. In the rivers especially, whether they fall into the Western or Eastern sea, in the Clyde, the Eden, and the Lune, equally with the Tweed, the Tyne, and the Ouse, we have indisputable remains of a Celtic language.

Whatever mixture of race took place previous to Cæsar's invasion, between the Britons and their continental neighbours, was confined, as far as our information extends, to the southern coast of the island—if, indeed, even here the intruders were not descended from the same stock as those amongst whom they established themselves. That the original inhabitants of Gaul were of the same lineage as the Britons has never been questioned; but the more recent settlers in this island were derived from the Belgic, as distinguished from the Celtic portion of that country, and Cæsar tells us, on the authority of the best informed of the Belgian people, that the latter were the descendants of a band of adventurers who had emigrated in comparatively recent times from the German banks of the Rhine. There is no reason to doubt the strict accuracy of this account; nor is it to be wondered that Cæsar, who was no critical ethnologist, accepted this fact as a proof of identity of race between the Belgians and the Germans. We know, however, that the tribes who were familiar to Cæsar as Germans, and whom we still recognize as such, were not the original inhabitants of Germany, but that that vast territory, extending to the sources of the Danube, was possessed in the time of Herodotus by the same Celtic race who occupied Gaul and all Western Europe, to the confines of the *Cynetæ*. Even in Cæsar's time the Germans were but recent colonists in their adopted country, and it is more probable that the Belgæ were the last remnants of the original Celtic population of Germany, and were driven across the Rhine by the invading Germans, than that they

were themselves a portion of the invading host. It is sufficiently wonderful that a district so wide as Germany should have been occupied in a comparatively short period by a people previously unknown to the civilized world, without assigning to them a third of Gaul also, separated as it is from their actual conquests by so formidable a natural barrier as the Rhine. Even, however, admitting the German origin of the Belgæ, and their amalgamation with the maritime tribes of Southern Britain, still, in the district immediately under consideration, the Celtic blood remained unaffected by foreign alliances, when the expedition of Cæsar directed attention to an island previously almost unknown to geographers beyond its name.

After the establishment of the Roman supremacy, there can be no doubt that the exclusively Celtic character of the population was considerably modified; first by the settlement of Roman citizens either holding official appointments or engaged in commerce; secondly, and to a much greater extent, from the legionary and auxiliary forces quartered in the island. If the auxiliary troops had been solely or chiefly derived from one province of the empire, there is no question that their long residence amongst a subject people must have had a tendency to introduce their own customs, arts, and, to a certain extent, their language, amongst the general population; but so far was this from being the case, that amongst the garrisons scattered over the island we find representatives of almost every nation which owed allegiance to Rome, and the influence of each corps must either have been purely local, or, which is more probable, the whole must have merged their provincial peculiarities in their acquired characteristics as Roman soldiers. In this way, the tendency of this vast military establishment was to effect the complete Romanization of the British people. An idea has indeed been put forth by some writers that an element of Saxon, or at least of German, nationality was predominant amongst the auxiliary forces; but this has been advanced without due consideration of the authentic documentary information which we possess on this subject. In the Notitia we have a complete list of all the garrisons in Britain. Excluding the legionary troops, we find eight garrisons of auxiliaries under the command of the Count of the Saxon Shore, of which two only were Germans, a troop of Tungrecani at Dover, and a cohort of Vetasii at Reculver. Under the Duke of Britain we find thirty-six, of which not more than three were Germans, the first cohort of the Batavians, the first cohort of Tungri, and the first cohort of Frixagi, if, indeed, the last were Germans, but their

nationality is not clearly ascertained. Of the other garrisons under the Duke of Britain, thirteen were either not derived exclusively from any particular locality, or their country cannot be determined.* The remaining twenty are derived from no fewer than ten distinct provinces of the Roman Empire, and as the whole were quartered in the district now under consideration, it may be well to mention the number from each, viz.: six from Belgium,† and two from the other provinces of Gaul,‡ five from Spain,§ two from Dalmatia,‖ and one each from Pannonia,¶ Dacia,** Thrace,†† Mauritania,‡‡ and Sarmatia.§§ These garrisons were not mere moveable forces, subject at any time to be transferred from one station to another, but rather military colonies which occupied the same position for ages, as appears from numerous inscriptions commemorating the same troop or cohort, resident in the same locality during a long series of years. Whether each company was recruited from the colony of which it was the nucleus, or by drafts from the province to which it originally belonged, or by indiscriminate enlistment from any quarter, we are not in a condition to determine; neither do we know whether the officers, as well as the men, were provincials, or whether, like our own Indian Army, the officers belonged to the parent state, the men to the provinces, or if any general rule prevailed on this head; and yet all these are considerations which would materially affect the social position not only of the colony but of the district in which it was situated. It is not probable that any considerable portion of the auxiliary forces were withdrawn with the legionary from Britain, when the

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* Equites Catafractarii.
Numerus Vigilum.
Numerus Exploratorum.
Numerus Directorum.
Numerus Defensorum.
Numerus Supervenientum.
Cohors prima Ælia Classica.
Ala Prima Herculea.
Ala Saviniana.
Ala Petriana.
Numerus Pacensium.
Numerus Longovicarisium.
Cohors prima Cornoviorum.

† Numerus Nerviorum.
Cohors tertia Nerviorum.
Cohors sexta Nerviorum.
Cohors secunda Lingonum.
Cohors quarta Lingonum.
Cohors prima Morinorum.

‡ Cohors quarta Gallorum.
Numerus Solensium.

§ Cohors prima Hispanorum.
Numerus Barcariorum Tigrensium.
Ala prima Asturum.
Ala secunda Asturum.
Cohors prima Asturum.

‖ Equites Dalmatæ.
Cohors secunda Dalmatarum.

¶ Equites Crispiani.
** Cohors prima Ælia Dacorum.

†† Cohors secunda Thracum.

‡‡ Numerus Maurinorum.
§§ Cuneus Sarmatarum.

Romans relinquished the sovereignty of the island; many garrisons were no doubt overwhelmed and annihilated, especially on the frontier, by the northern barbarians, and many were probably merged in the general population, with whom they must, from long residence and frequent alliances, have become identified in interest and feelings.

All these considerations seem to point to the conclusion, that on the termination of the Roman power the original Celtic element was still predominant in the population, mixed indeed with many others by a variety of foreign connections, and improved and refined by contact with the Roman citizens. The presence of a Belgian corps in one locality, of a Spanish in another, and of a German in a third, would, to some extent, alter the provincial characteristics in each, but not to such an extent as materially to affect the national character of the Briton civilized by the Roman, or in the appropriate phrase, which has been generally adopted, the Romanized-Briton.

The Saxons are known to us by name as early as the time of Ptolemy, about A.D. 120, but they were then an obscure tribe, sharing, with seven others, the contracted territory of the Cimbric Chersonese; and more than a century and a half elapsed before they did anything to merit the notice of historians. In the year 287, we read of a confederacy of Saxons and Franks, who had made themselves so formidable by their incursions on the coasts of Belgium and Armorica, that a Roman fleet was stationed at Boulogne to check their piracies, and the celebrated Carausius, who afterwards assumed the purple in Britain, was appointed to the command. The shores of Britain were before long subjected to similar devastations, and an officer was appointed, with the title of Count of the Maritime Tract, whose special duty was to defend the Southern and Eastern coasts from the barbarians. In the year 367, the Count of the Maritime Tract was slain, together with his brother-officer, the Duke of Britain, in an incursion of the Picts and Scots. The Saxons do not, at that period, occur amongst the invaders of Britain, but they made a simultaneous movement against the shores of Gaul, which added to the perplexities of the Roman Emperor, Valentinian, and might even have been fatal to his power, but for the vigorous measures taken by his General, Theodosius.

The title given to the guardian of the sea-coast in the Notitia is "Count of the Saxon Shore," and the garrisons under his command extended from

Lyme in Dorsetshire, to the coast of Norfolk, between which points one legion and eight bodies of auxiliaries were stationed in strong positions.

Whilst the imperial government continued, and these garrisons were maintained, it is difficult to believe that any permanent Saxon settlements were effected within the limits specified, nor do historians record any further North, although the coast from the Tyne to the Forth seems to have been altogether unprotected.

The withdrawal of the Roman legions seems to have opened to the Saxons a new sphere of action. Their enterprises were no longer confined to mere predatory expeditions, but they carried out, on a small scale indeed at first, plans of permanent conquest. The first Saxon settlement on record was in the Isle of Thanet, and was subsequently extended to the whole of Kent. The second, and at no distant interval, was at the North-eastern extremity of what was afterwards the kingdom of Northumberland, adjacent, as we read in Nennius, to the great barrier, erected in the reign of Antoninus Pius, between the Forth and the Clyde. We may criticise the narrative of Nennius; we may question his details, and refuse to credit the alleged relationship between the two leaders, Octa and Ebissa, and the Kentish Hengist; but there is no reason to doubt the fact of a very early Saxon settlement in this district. No part of the coast held out greater temptations. The shortness of the voyage, the fertility of the land, the utter want of all means of defence, in a district which had already been drained of its population during the Pictish inroads, were recommendations which were not likely to be neglected, and the fact of a settlement having been effected in this quarter is indirectly confirmed, though not directly stated by Beda. * This early colonization of Lothian is not without interest, as affording materials for speculation on the historical realities of the reign of king Arthur, divested of the absurd legends with which they

* Having briefly noticed the settlement of Hengist and Horsa, in Kent, he proceeds to say, "In a short time, swarms of the aforesaid nations came over into the island, and increased so much, that they became terrible to the nations who had invited them. Then having on a sudden entered into alliance with the Picts, they turned their arms against their former confederates." These new invaders can hardly have been the bands of Aella, or Cerdic, the only leaders whose names occur in the Saxon Chronicle, as invaders of Britain, for many years after the arrival of Hengist. Hengist himself, as well as Aella and Cerdic, had sufficient occupation within the districts in which they severally settled, in the South of Britain, without involving themselves in an offensive alliance with an alien people, at the further extremity of the island. The Saxons who entered into this alliance, must have been neighbours of the Picts, and such were the colonists of Lothian, as described by Nennius.

have been blended. The names, at all events, of several of his battle-fields, exist in the locality, and the ancient name of Lothian itself does not materially differ from that of "the region Linnuis," in which the site of four of these battles is placed by Nennius and Henry of Huntingdon.*

In tracing the establishment of the kingdom of Northumberland, however, we have a void of a century before we reach the times of Ida, from whom, as Beda and the Saxon Chronicle inform us, the Royal race of Northumberland sprung. From this intimation, we are apt to conceive rather exaggerated notions of the magnitude of Ida's kingdom, which was not that of Northumberland, but Bernicia only, one of the petty States out of which that kingdom was afterwards formed. Bernicia itself, in after times, was a province of very considerable magnitude, extending from the Tees to the Frith of Forth, but it would be rash to affirm that the kingdom of Ida enjoyed such ample limits. We know not, indeed, whether Lothian formed any part of it; all that is recorded on this head being the situation of its capital at Bamburgh, within the present county of Northumberland. The reign of Ida lasted twelve years, from A. D. 547 to 560; the reigns of six of his successors occupied thirty-three years. Contemporary with the latter, for thirty years, was Ælla, king of Deira, the district between the Humber and the Tees. In 593, Ethelfrith, the grandson of Ida, succeeded to the throne of Bernicia, to which he added that of Deira also, by the expulsion of Edwine, the son of Ælla, and so established the kingdom of Northumberland. The coast from the Humber to the Forth had been gradually filled with a Saxon population, the original inhabitants having been exterminated, or driven into the interior, after a desperate but ineffectual resistance. Of this struggle we gather a few details from the Saxon genealogies, appended to Nennuis; and several of the lays, yet extant, of the British Bards of the sixth century, are devoted to the praise of the native chieftains, who for a while withstood the onslaught of Ida and his successors. To Ethelfrith was reserved the conquest of the central and Western portion of Northumbria, and we find in the pages of Beda ample testimony to the completeness of his success. "He conquered," as

* "The second, third, fourth. and fifth battles, were on a river called Dubglas, in the region Linnuis." Giraldus Cambrensis applies the name Leonis to Lothian, and in an ancient record, of the reign of Henry II., we find the same district described as Loeneis, a name which still more nearly approximates to Linnuis. Again, if Linnuis be Lothian, we have no difficulty in identifying the Dubglas with the little river Dunglas, which is in that district.

we read, "more territories from the Britons than any other king or tribune;" but though he was thus able to overrun a vast district of country, his followers were not sufficiently numerous to colonise it. In some places, indeed, "he expelled the inhabitants, and placed Angles in their stead," but "in others," and doubtless to a much greater extent, "he allowed the vanquished to retain their lands, on payment of tribute." Even in the succeeding reign of Edwine, the West Riding of Yorkshire retained its British population and form of government, and one of the incidents of which we read, is the expulsion of a petty prince, on the very outskirts of that district, Certic, king of Elmet. The only exploit of Ethelfrith within the Western limits of Northumberland, of which Beda gives any account, is the defeat of Aidan, king of the Scots, at Degsastan, or Dawston, in Liddisdale, but that he was master of the whole country Southwards, to the extreme boundary of Lancashire, may be inferred from the details which we possess of his successful invasion of the present county of Chester. The defeat of Brocmail, at Carlegion, and the slaughter of the monks of Bangor, are familiar to every reader; nor are we without grounds for believing that this victory was followed by the permanent subjugation of the country South of the Mersey, and that Ethelfrith may be regarded as the founder of the Mercian, as well as the Northumbrian kingdom. Crida is indeed described by some of our historians as the first king of Mercia, but he seems to have been the tributary, as he was the contemporary, of Ethelfrith, for his grandson Penda was, as we learn from the Saxon genealogies above referred to, the first of the Mercian rulers who established an independent monarchy, and threw off the yoke of the Northern kings.

Except as regards the absorption of the little kingdom of Elmet, the reign of Edwine does not appear to have been distinguished by any alteration in the internal condition of his dominions. The Anglo-Saxon population were under his immediate government; the petty British States were still ruled by tributary princes. His ambition was rather to extend his authority beyond the limits of his own kingdom, than to consolidate his power at home. In this larger object he was for a while preeminently successful; "he obtained the supremacy over all the nations, as well Angles as Britons, who inhabit Britain;" and he is even said to have subdued Man and Anglesea. The impolicy of his conduct was however apparent in the sequel. The submission of Caedualla, king of North Wales, was neither cordially tendered, nor easy to be enforced, whilst Penda, the tribu-

tary king of Mercia, bore with impatience his dependent position. The union of these two powerful neighbours, aided, in all probability, by the British States within his own territory, exposed him to an invasion on a scale so formidable, that he was unable to offer any adequate resistance, and, although he hastened to meet the enemy with such forces as he could muster, the event of the battle was not only fatal to himself, but destructive to the military power of his kingdom, his troops being all either slain, or hopelessly dispersed. The conflict took place at Hatfield, in the Southern part of Yorkshire. That Edwine should have moved thus hurriedly forward to meet the invaders on the frontier, rather than taken time to collect the strength of his kingdom in a more central position, was, perhaps, the result of distrust in the native population, who were at least as likely to join the kindred ranks of the invaders, as to aid a sovereign, to whom they were bound by no tie, but the yoke of conquest. At all events, if we are without direct information of their participation in the revolt, we know that they were not slow in availing themselves of its result. The kings of Strathclyde, the most important of the tributary States, of whom we hear nothing since the time of Ethelfrith, again appear on the page of history, having seized on this opportunity of asserting their independence. Of the British kingdoms which subsisted in Northumberland prior to the Saxon invasion, Birneich and Deur (Bernicia and Deira) were, as we have seen, overwhelmed by the followers of Ida, and of Ælla. Reged, to the West of Birneich, fell, after a vigorous resistance, under the repeated assaults of the Saxon chieftains, whose reigns intervened between those of Ida and Ethelfrith. Elmet again was colonised by Edwine, but to the West of these limits, Saxon occupation does not appear to have extended. Of the petty rulers, however, of the tributary provinces, no notices have been transmitted to us, except as regards the kings of Strathclyde, or, as they are designated by our earliest informants, of Alclyde, the latter being the name of their capital, on a rocky eminence, adjacent to the modern town of Dumbarton, whilst the former significantly describes the position of their territory in the great Strath or valley of the Clyde. Amongst the British kings, who warred against Hussa, king of Bernicia, the predecessor of Ethelfrith, besides Urien, of Reged, and Guallane, Nennius mentions Morcant and Riderch-hen, names we cannot fail to identify with Morken, and his successor, Ryderic, whom we meet with in Joceline's Life of Kentigern, as kings of Strathclyde, or, as he chooses to designate it, "the kingdom of

the Cambri." For our meagre knowledge of their successors, we are indebted almost exclusively to the brief notices of the Irish annalists.

On the death of Edwine, the antient divisions of Bernicia and Deira were again held for a short period as separate kingdoms, the former by Eanfrid, the son of Ethelfrith, the latter by Osric, the son of Ælfric, the brother of Ælla, and uncle of Edwine. It was not, however, to be expected that either state, weakened as each was by the late disaster, could successfully resist a power which had overthrown the sovereign who wielded the resources of both. Accordingly, we find Osric slain, with all his forces, in an attack upon the British king, and Eanfrid compelled to appeal to the mercy of the conqueror, and by him barbarously murdered. For the space of a year we have the unusual spectacle of a British monarch reigning over a great Saxon state, "not," says Beda, "like a victorious king, but like a rapacious tyrant, ravaging and destroying." This state of affairs was put an end to by Oswald, the brother of the murdered Eanfrid, who engaged and defeated the usurper in the neighbourhood of Hexham. Of Oswald we are told, "he brought under his dominion all the nations and provinces of Britain, which are divided into four languages, the Britons, the Picts, the Scots, and the English." This is, however, somewhat inconsistent with another statement of the same venerable historian, in which he claims for Oswald only the same extent of dominion which had been attained by Edwine, and ascribes to his brother Osric the subjection, and that only partially, of the Picts and Scots. It is not to be concealed, indeed, that Beda somewhat unduly magnifies the prowess and temporal grandeur of the patrons of his own church, whilst the heretic Britons meet with even less favour at his hands than his Pagan countrymen. However great the power of Oswald, he was defeated and slain by Penda, king of Mercia, who appeared as an auxiliary only in the former battle, which terminated in the death of Edwine. The reign of Osric extended from the year 642 to 684, during which period, whatever might be his success against the Picts and Scots, we have no record of any attempt to bring the British population of his own dominions under his more immediate control. This work seems to have been reserved for his son and successor, Ecgfrith, to whose reign may be ascribed, with tolerable certainty, the complete subjugation of the Britons of Lancashire, Cumberland, and Galloway, the entire remnant of the native population within his limits, with the single exception of Strathclyde. We have not, indeed, any account of the abolition of the

tributary domestic government either in Cumberland or Lancashire, but we have authentic records of the share of the spoil which Ecgfrith rendered to the Church. In Cumberland, he gave to Saint Cuthbert, Carlisle with the country for fifteen miles roundabout; in Lancashire he gave him Cartmel, "with all its Britons." Had these districts been in the immediate possession of the preceding Christian kings of Northumberland, it is not probable that until this reign the ecclesiastical historian would have been utterly silent as to any religious foundation, or donation to the church, between the Solway and the Mersey. Even now we have no evidence that the Northumbrian kings resided at all amongst their western subjects, as they did, sometimes at one place, sometimes at another, at different seasons of the year, amongst the Anglo-Saxon population of the east. Even in Beda's time, half a century later, amongst the numerous villas maintained for the migratory residence of the royal household, not one occurs beyond the chain of hills which separated the eastern district of the Northumbrian kingdom from the west. The reason is obvious, that even then no attempt had been made to colonise the latter. Of Galloway we only know that it was incorporated with the province of Bernicia in Beda's time; and when we look to the disorganized and abject state of Northumberland, as described by himself, for forty-six years previous, we can hardly ascribe its subjugation to a later period than the reign of Ecgfrith. After his disastrous death "the hopes and strength of the English crown began to waver and retrograde; for the Picts recovered their land, which had been held by the Angles, and the Scots that were in Britain, and some, also, of the Britons themselves, recovered their liberty, which they still retain after a period of forty-six years." These Britons who recovered their liberty were, undoubtedly, the people of Strathclyde. If Galloway had, like Strathclyde, maintained a domestic, though dependent, government at the critical period of Ecgfrith's death, we can hardly doubt that, like her northern neighbour, she would then have achieved her independence. That she did not do so, but continued a member of the province of Bernicia, we have already seen.

Of the civil government of Galloway during the century which succeeded the death of Beda, we have no particulars, but for more than half that period we may infer that no change took place, as during that time the series of Anglo-Saxon bishops was uninterrupted. The last of these was Baedulph, who was appointed A.D. 790, but how long he held the see is altogether uncertain; neither do any of our historians mention the cause of the

abolition of the episcopate. Little doubt, however, exists on this head, for we learn indirectly, from several sources, that not long after this time the government of the province must have passed out of the hands of the kings of Northumberland, and that this revolution was brought about by the invasion of a people, from whose residence, within its bounds, the district acquired the name of "Terra Pictorum," the land of the Picts. Chalmers, and other Scotch antiquarians, maintain that these intruders were not the well known Picts of North Britain, but a tribe who long resided in Ireland, under the designation of "Cruithne," of which they inform us "Pict" is a translation. Notwithstanding this respectable authority, it may be fairly questioned, whether an invasion by the Picts of the north is not at least as probable as by the "Cruithne" from the west; and whether it is not more likely that the term "Picts" was applied by the neighbouring people to a race who had long borne it, and who still existed under it at no remote distance, than that this familiar term was transferred as a translation of the barbarous name of new settlers from another island. In support of this view we may also refer to the events, in connection with which we first hear of the Picts of Galloway. In the year 837, we read in an antient document, printed by Innes, under the title of "Nomina Regum," that Alpin, king of the Scots, was slain by the Picts in a locality which is clearly recognised within this district. Again, we learn that his death was avenged by his son Kenneth, and "hence," says our authority, "the government of the Picts was superseded by the government of the Scots." Now the government which was superseded was not that of the Cruithne, but of the antient Picts, and we may surely infer that the people whose atrocity led to this retribution were Picts also, and not Cruithne. From the accession of Kenneth to the joint rule of the Picts and Scots, the term "Picts" ceased to be applied to any portion of the united people. So complete, indeed, is the disuse of the name, that it was long contended that the people themselves were exterminated by the avenging Scots. In Galloway, however, the name still subsisted. In 875 the Danes ravaged the territory of the Picts and Strathclyde Britons. Joceline, in his life of Kentigern, uses "Terra Pictorum," in speaking of Galloway; and Reginald of Coldingham, in describing the wanderings of the monks of Lindisfarne with the body of their patron, St. Cuthbert, places beyond dispute, the locality of the land of the Picts, by noticing Kirkcudbright as within its limits. As late as the middle of the twelfth century, Richard of Hexham,

a contemporary writer, speaking of the natives of Galloway, who formed part of the miscellaneous forces of the Scotch king at the battle of the Standard, describes them as Picts.

Of the government of these people, till they passed under the rule first of the kings of Cumberland, and afterwards of those of Scotland, we know nothing, but for ages after they were united to the latter monarchy, they preserved traces of laws and customs peculiar to themselves.

Two of the kings of Strathclyde, Morken and Ryderic, have already been noticed, as the opponents of the Saxon conquerors of Bernicia, in the sixth century. It may not be out of place to collect here such further particulars of this little State as are to be met with in the pages of the English and Irish annalists. The latter speak of them as kings of Alclyde, and sometimes as kings of the Britons, under which latter denomination it is not always easy to determine whether these princes, or the kindred rulers of North Wales, are the parties indicated. In the Saxon Chronicle, the term "Strathclyde Welch" is used. This is rendered "Cumbri" by Ethelward, whose annals are little more than an abridged translation of the chronicle. Joceline again, who wrote in the twelfth century, extending this nomenclature from the people to their country, talks of the latter as "Regnum Cambrense," "Regnum Cambrinum," and "Cambria," thus causing succeeding writers to confound the little district of Strathclyde with the larger territory of Cumbria, which as yet had no existence under any general government, or common name. Even Chalmers, although he emphatically cautions his readers against the mistakes of his predecessors in this very particular, does not avoid error himself, in respect to the limits either of the Regnum Cambrense of Joceline, or of the kingdom of Cumbria. In the former he includes Galloway, from the latter he excludes Cumberland, South of the Solway, and thus asserts the identity of the two. The limits of Cumbria will form a necessary subject of enquiry, by and by. As regards the Regnum Cambrense, or kingdom of Strathclyde, we have already seen that it enjoyed an independent existence, whilst Galloway was comprised within the Saxon province of Bernicia. Even Joceline himself, whose inaccurate nomenclature has led others into error, does not claim Galloway as within the Regnum Cambrense. On the contrary, when he speaks of the missionary labours of Kentigern, in "the land of the Picts" (the name by which Galloway was known in his time), he expressly tells us that it was

beyond the precincts of the diocese of the Saint, which was co-extensive with the Cambrian kingdom. Assigning to Galloway the utmost extent which has ever been claimed for it, there still remain for the kingdom of Strathclyde the modern counties of Lanark, Ayr, and Renfrew, on the South of the Clyde, and, probably, Dumbartonshire on the North. This last, including the city of Alclyde itself, was not originally British territory, for we are expressly told by Beda, that in former times, before the settlement of the Scots in Britain, the Frith of Clyde separated the Britons from the Picts. In his own time, however, he informs us, the Britons possessed the impregnable city of Alcluith, on its Northern shore. "The Scots, also, arriving on the North side of this gulf, had formed a settlement there." The capital of the Strathclyde Britons was thus placed between the territories of the Scots and Picts, the former of whom occupied Argyleshire, and the lower district of the Clyde, whilst the latter still retained the dominion of the Eastern side of the island, from the Forth Northwards. The position of Alclyde beyond the deep-water barrier of the Frith, on which it stands, was doubtless of the utmost importance to the Britons, in their struggles for independence with the Saxon kings of Northumberland. When their rich lands in Clydesdale were overrun, they could still maintain the contest with their baffled pursuers, in this rocky fastness, although, even here, the Saxons, in alliance with the Picts, on one occasion, succeeded in capturing their stronghold.

Chalmers places at the head of his series of Strathclydian kings, *Nau* or *Cau*, * the reputed father of Gildas, but if Nau is entitled to any place at all in authentic history, it is on the authority of a Life of Gildas, in which he is represented as a Scottish, and not a British prince. Huail, his son, is said to have been driven from the throne by the celebrated king Arthur, and though we must receive this statement with caution, as based on very meagre testimony, it is by no means inconsistent with the account given by Beda, of the successive occupations of the district North of the Clyde, by the Picts and the Scots, and the subsequent acquisition of Alclyde by the Britons. Nau, in this case, must have been contemporary with the earliest Scottish settlers on record, as Arthur appears to have commenced

* See the Life of Gildas, prefixed to Mr. Stevenson's edition of that writer; also, the Life of Gildas, by Caradoc, of Lancarvan. Both are manifestly apocryphal as regards Gildas, but it does not necessarily follow that the historical personages who are introduced are unreal.

his reign towards the close of the fifth century, and Fergus, the son of Erc, the founder of the Scottish dynasty, at the beginning of the sixth. However this may be, tradition has connected Arthur with the South and South-west of Scotland, and the North of England, and the local nomenclature affords many traces of his fame, especially in the case of this very citadel of Alclyde, or Dumbarton, which is styled "Castrum Arthuri," in a record of the reign of David II.*

The battle of Badon, the crowning exploit of Arthur's career, is placed by the most trustworthy authorities, in A.D. 516, and it is probable that he did not survive it many years. If he were really king of Strathclyde, it is not likely that he was the immediate predecesssor of Morken, as the latter was still living in the reign of Hussa, king of Bernicia, at least sixty years later. The names of the intervening reguli, however, no where occur, nor is their loss of much importance. Ryderic, his successor, died in 601, in the eighth year of the reign of Ethelfrith, king of Northumberland. Two years later occurred the signal defeat of Aidan, king of the Scots, at Dawston, and it is probable that the subjection of the Britons was the immediate consequence. At all events, during this and the succeeding reign of Edwine, we hear nothing of the independent existence of this people, nor do we even know the names of their chieftains. The same state of dependent inaction prevailed during the reign of Oswald, but in the very year of his disastrous death, A. D. 642, we find the Britons carrying on important military operations on their own account, in which Owen their king distinguished himself, by slaying on the battle-field of Strathcarmaic, Donal Break, king of the Scots. During the long reign of Oswi, in Northumberland, we read of one king of Strathclyde, Guiret, but the record is only of his death, A.D. 657, not of any exploits which he performed.

On the death of Ecgfrith, A.D. 670, the Britons, as we have seen, recovered their liberty, and henceforward we have a tolerably complete list

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* See Chalmers' Caledonia, Book II. Chapter ii., in which he gives a variety of local names derived from king Arthur. To this list many additions might be made. Chalmers also gives a list of the kings of Strathclyde, from the Ulster Annals, Symeon of Durham, &c. See also Ritson's "Annals of the Caledonians, Picts and Scots," in which he has inserted whatever he has been able to collect, relative to the various tribes who have at any time dwelt within the limits of modern Scotland, as well from the classic authors, as the mediæval historians, and the Lives of the Scottish and British Saints.

of the kings of Strathclyde, with notices of their conflicts with the Scots, Picts, Northumbrians, and Danes, during the two succeeding centuries.

In the year 869 Alclyde was utterly destroyed by the Danes; and henceforward the Northern Britons are no longer distinguished in the Ulster Annals as of Alclyde, but of Strathclyde, from which we may infer that the citadel was never rebuilt, if, indeed, they continued to retain any territory north of the Clyde. In 872 we are briefly told by the same authority, that Artga, king of the Strathclyde Britons, was slain at the instance of Constantine II. of Scotland. The motives which prompted this sanguinary act may be gathered from a notice in the antient Pictish Chronicle, published by Innes, from which we learn, that Ku, who had married the sister of Constantine, ascended the vacant throne. After the death of Constantine and his brother Aodh, who reigned after him a single year, Eocha, the son of Ku and nephew of Constantine, succeeded to the crown of Scotland, as well as of Strathclyde, A D. 882. Eocha was a minor under the tutelage of Gregory, or Grig, to whom he was indebted for his accession to a throne rendered vacant by the death of Aodh in battle. Gregory was so distinguished by his prowess and the success of his arms, that he is represented by most of the Scottish historians, not as the regent, but the king of that country, and his exploits are magnified beyond those of any of his predecessors. Whatever amount of exaggeration we may attribute to the accounts of his conquests in England and in Ireland, there is every reason to believe that the history given by Fordun, of his peaceful acquisition of certain British provinces, is entitled to credit. "The indigenous inhabitants," we are told, "of certain provinces voluntarily submitted themselves to Gregory, with their lands and possessions, thinking it preferable to be subject to the Scots, who, although enemies, were Christians, than to infidel pagans." These "Indigenæ" must have been the people of Galloway, and of the district around Carlisle; for the Strathclyde Britons, the only other people within the sphere of his influence, to whom the designation could be applied, were already under his authority as the guardian of Eocha. The transaction is what might have been expected from the relative position of the parties, for nothing was more natural than that two petty states, too weak to defend themselves from the hateful aggression of the Danes, and deprived of the protection of the Saxon kings of Northumberland, who had themselves succumbed to the common enemy, should turn for aid to the only neighbour who seems sufficiently powerful

to resist the invaders. The vigour of Gregory, however, was inadequate to support his usurped authority, and after holding the reins of government eleven years, he was expelled, together with Eocha, by Donal the son of Constantine, A.D. 893. To Donal, who was slain by the Danes in 904, succeeded Constantine III., the son of Aodh, who was slain by Gregory. Four years before his accession to the throne of Scotland his brother Donal had been "elected" king of the Strathclyde Britons, on the death of another Donal, who was probably the immediate successor of Eocha. During the life of Donal the districts of Carlisle and Galloway were not united to Strathclyde, but remained attached to Scotland; from which, however, they were separated after his decease, and given to his son and successor, Eugenius. To this new kingdom, thus founded by Constantine in favour of his nephew and presumptive heir, by the union of Carlisle and Galloway with Strathclyde, was given the name of Cumbria, derived from Cumbri, the common appellation of its inhabitants. Its extent is precisely defined in a return made by the prior and convent of Carlisle to a writ of Edward I., requiring them, as well as other religious houses, to furnish, from chronicles or other documents in their possession, any information bearing upon the alleged right of supremacy over Scotland vested in the English crown. The return sets forth that "That district was called Cumbria, which is now included in the bishoprics of Carlisle, Glasgow and Whitherne, together with the country lying between the bishopric of Carlisle and the river Duddon;" in other words, the entire tract from the Clyde to the confines of Lancashire. In the "Inquisitio Davidis," which does indeed extend to all parts of Cumbria which remained in David's possession, we are expressly told that "he had not then within his dominion the whole Cumbrian region," the present county of Cumberland, or as it was then called, of Carlisle, having been severed from it soon after the Norman conquest. Although Fordun is the only author who narrates the cession of Carlisle and Galloway to Gregory, and the subsequent grant of these districts by Constantine to Eugenius, whereby they were united to Strathclyde, and the whole merged in a single government, we have abundant evidence of the existence of Cumberland and the intimate union of Constantine and Eugenius at this period. In the year 938 these princes, in conjunction with the Danes and Welsh, attempted to wrest the sovereign power out of the vigorous hands of Athelstane. The combined forces were signally defeated by the Anglo Saxon monarch at Brunanburgh;

Eugenius was slain, and Constantine escaped only by a precipitate retreat.

Edmund having completely wasted Cumberland, placed it at the disposal of Malcolm, king of Scotland, an acknowledgment, it would seem, of the right of the Scottish crown to that territory, and a presumptive proof of the accuracy of Fordun's narrative.

From this period, Cumberland continued in the possession of the royal family of Scotland, sometimes retained by the king himself, at others, held by a member of his family; usually, if we may credit the national historians, by the proximate heir. The only circumstance which is recorded of it for many years, is its total devastation by Ethelred, king of England, A.D. 1000, at which time it is represented by Henry of Huntingdon as the principal rendezvous of the marauding Danes. In 1052, Macbeth held the Scottish throne, whilst Malcolm, the son of his predecessor, Duncan, sat on that of Cumberland. Siward, Earl of Northumberland, was commissioned by Edward the Confessor to invade Scotland, and avenge the "murder" of Duncan. In this he succeeded, defeated and slew Macbeth, and placed the king of Cumberland, or, as some historians assert, his son, on the throne of Scotland. This Malcolm, surnamed Caenmore, held at the time of the conquest, Cumberland and Lothian, in addition to the ancient kingdom of Scotland. During the reign of William the Conqueror, the Earldom of Carlisle, containing the present county of Cumberland, and part of Westmoreland, was severed from Malcolm's possessions, and the existing limits established between England and Scotland. The kingdom of Cumbria was thus reduced to the dimensions indicated in the Inquisitio Davidis, and was held as a principality dependent on the crown of Scotland. Lothian, on the contrary, was held by the successive kings of Scotland, as a feof of the crown of England, and Odericus Vitalis says it was for this province, and neither for Scotland, nor for Cumberland, that the much contested homage was due.

Having thus traced the history of Strathclyde, Galloway, and Carlisle, from the remotest period, respecting which any information is to be found, down to their amalgamation, under the name of Cumbria, and the ultimate division of that territory between England and Scotland, it remains to collect such traces as exist of the condition of the district between the Duddon and the Mersey,

So long as the native chieftains were allowed to exercise a subordinate

authority, the Northumbrian kings had no occasion to interfere with the internal government of the subject provinces. If the tribute was duly rendered they remained unmolested; if it was withheld, payment was enforced by arms; or, in extreme cases, the refractory state (to use a modern phrase) was "annexed," as we have seen in the instance of Elmet. When, however, the domestic government was extinguished, it was necessary to provide a new administrative machinery. Accordingly, at the very period to which, on other grounds, we have assigned the extermination of the native dynasties in Lancashire, Cumberland and Galloway, we find for the first time in the Northumbrian annals, the appointment of a new class of officers, who are variously styled by Beda—"tribuni," "duces," and "præfecti"—whose administration appears to have extended not only to the Britons, but to the subject Picts, and even to the Irish, who were partially subdued by Ecgfrith. After his reign and the contraction of the territory of his successors, the authority of these officers was necessarily confined to the Britons. Henceforward the names of several "duces," or as they are termed in the Saxon Chronicle, "ealdormen" occur, but the only one whom we can distinctly identify as connected with Lancashire is Wada, whom we find in the year 798 stationed in the neighbourhood of Whalley, which, as well as Manchester, is expressly stated in the Saxon Chronicle to be in Northumberland. The grounds on which Dr. Whitaker contends against this direct historical testimony, that the Ribble and not the Mersey was from the first the south-western boundary of Northumberland, are, first, that the district between these rivers formed part of the Mercian diocese of Lichfield, and not the Northumbrian diocese of York; and, second, that the local nomenclature bespeaks the Mercian dialect to the south of the Ribble, whereas the Northumbrian prevails on the north. But surely both these circumstances are consistent with the supposition that the territory between the Ribble and the Mersey was taken from Northumberland by Edward the elder, and annexed to his own dominions, when he directed the occupation of Manchester in 923. It is natural to suppose that he would unite his new acquisition to a bishopric within his own dominions; and the only authority which Dr. Whitaker adduces in support of his assertion, that it was always a portion of the diocese of Lichfield, is a document which he cites under the title of "Status de Blackburnshire," to which he does not attempt to assign an earlier date than the fourteenth century.

As regards the etymological argument, it may be remarked, that the dialectic differences of speech between the Mercians and Northumbrians did not originate in any diversity of race in the first instance, for both were Angles, but were introduced when Northumberland was overrun by the Danes, to whose vocabulary nearly every peculiarity of the Northumberland dialect may be traced. Although it may be true of Northumberland generally that it was parcelled out amongst the Danish invaders as early as the year 876, it is probable that many years would elapse before any actual colonization could be effected in this quarter—the most remote of all from the basis of their operations on the Tyne. In the mean time the occupation by Edward the elder effectually secured it from molestation.

During the long period which intervened between the reigns of Ecgfrith and Edward the elder, there can be no doubt that a considerable Saxon population was introduced; the land probably was enjoyed almost entirely by Saxons, still, perhaps, the great body of the inhabitants were of the old British stock. Had it been otherwise the district would either have been formed into a county of itself, or have been incorporated with some other county. That such was not the case even at the period of the Norman Conquest we know on the unquestionable authority of Doomsday, in which it appears, not as shire-land, but as a detached possession of the crown, under the title of "Terra inter Ripham et Mersham." This invaluable document affords additional confirmation to the views expressed above, first, that this district was originally part of Northumberland; second, that it had, at a later period, been united to the monarchy of England. Of the former proposition we have proof in the prevalence within its limits of the ancient tenure of Drengage, of which we have no instance beyond the bounds of Northumberland: of the latter in the circumstance, that whilst the country to the north of Ribble, itself no part of any county, is appended, in the survey, to Yorkshire, the "Terra inter Ripham et Mersham" is appended to Cheshire, which was always recognized as within the province of Mercia.

Seven years afterwards, we learn from Roger of Wendover, that Edmund, king of England, with the aid of Leoline, king of South Wales, ravaged the whole of Cumberland, and put out the eyes of the two sons of Dunmail, king of that province. Dunmail, himself, seems to have escaped. He was probably the son of Eugenius, or Owen, the preceding king, and the same person who is described as Dunwallon, "the son of Owen," and who died at Rome thirty years afterwards. In the annals of Ulster, indeed, this Dun-

wallon is described as king of Wales, but Caradoc calls him prince of Strathclyde, and his patronymic designation seems to identify him with Dunmail, if, as we assume, the latter was the son of the first king of Cumberland.

The Northern part of Lancashire, which is described in Doomsday as Agemundrenessa (Amounderness) continued, after the abolition of the royal dignity in Northumberland, A. D. 952, under the government of the Earls of that province. One of these, Eadulf, about a century after the above date, is accused by Symeon of Durham, of committing savage atrocities amongst the Britons. These may either have been the British inhabitants of his province, or the neighbouring people of Cumberland. We know that a small district of the latter county, beyond the Duddon, was brought under the dominion of the Northumbrian Earls, and is described in Doomsday as part of Amounderness, in which is included also the Barony of Kendal, which forms a moiety of the present county of Westmorland. The whole district is returned as the property of the Crown, the greater part having been held, in Edward the Confessor's time, by Tosti, Earl of Northumberland. In fact, up to the period of the Conquest, the "Terra inter Ripam et Mersham," and Amounderness, appear to have been two vast seignouries or honors, the one appertinent to the Crown of England, the other to the Earldom of Northumberland, within which existed many manors and estates, held by private individuals, both under free and servile tenures. For a short period after the Conquest, the whole of the Southern seignoury, and a large portion of the Northern, were held by Roger of Poitou, but had reverted to the Crown before the Doomsday era. It is remarkable that the district of Cartmel, although it lies directly between the main body of the county of Lancaster and Furness, which is described as part of Amounderness, is unnoticed in Doomsday. From the period of the grant of this district by king Ecgfrith to Saint Cuthbert, not a trace is to be met with, either of Cartmel or its population of Britons, till the year 1188, when a Priory was founded here, by William Marshall, Earl of Pembroke. Long before that, it is probable that the distinctive features of a Celtic people had disappeared, not only here, but throughout Lancashire. Even in the Doomsday survey, there is little in the names of the proprietors, or in any other particular, to remind us how large an amount of Celtic blood must still have been diffused amongst the natives of that county. We might almost be led, from this consideration, to suppose that a system of extermination must have been pursued towards the Indi-

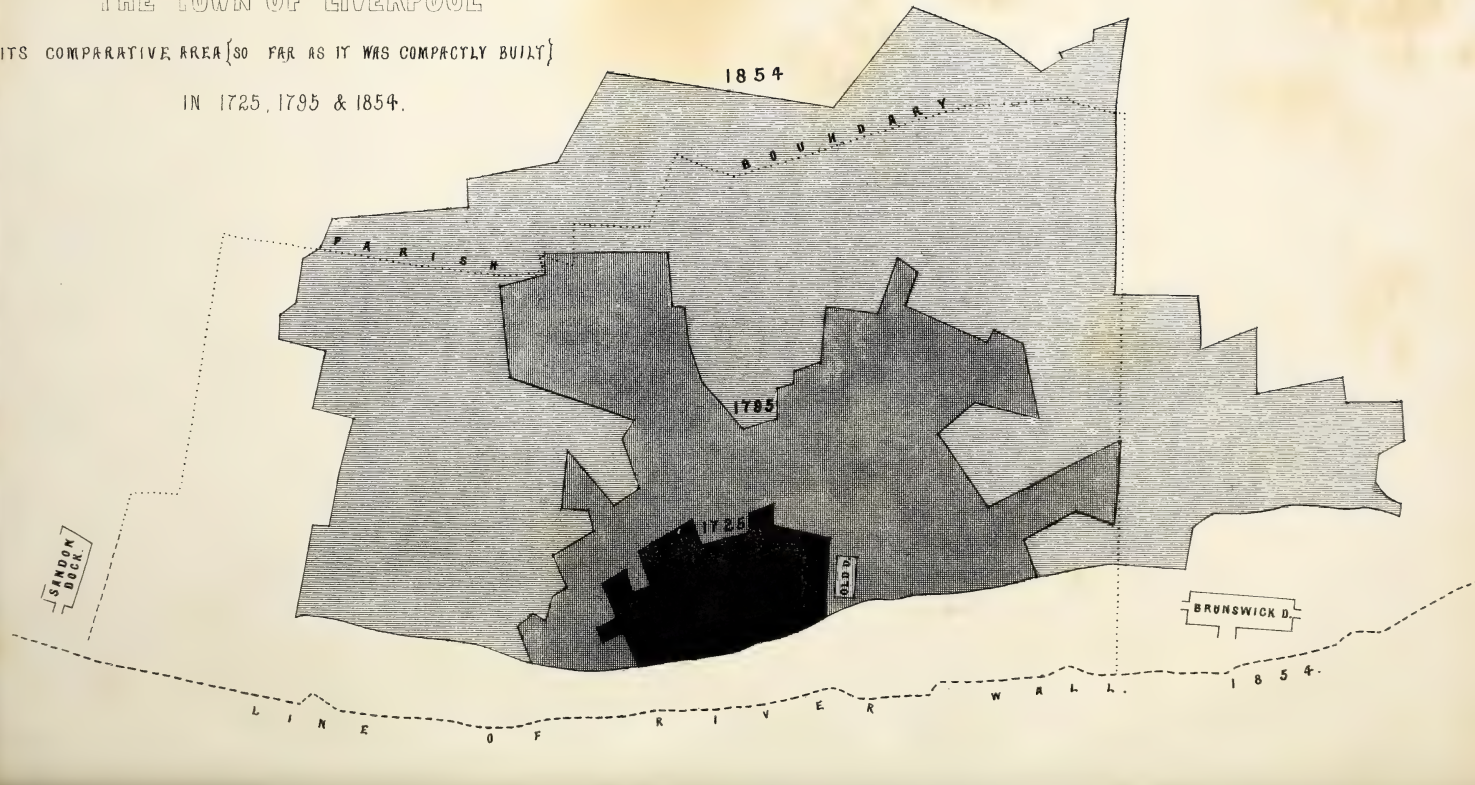
genæ, had we not found the same state of things to exist in Strathclyde, where the Britons were so long not only the most numerous, but the dominant race; and yet in the course of a few generations, there is little to distinguish the Strathclydians from the Saxon people of the neighbouring counties. Wherever a Celtic people have remained isolated, as the Welsh, the Highlanders of Scotland, and the Irish, they have preserved with wonderful fidelity the characteristics peculiar to their race; but where they have mingled with alien tribes, they have invariably received the impress of those with whom they came in contact, rather than imbued those with any portion of their own national peculiarities. Of the British communities between the Mersey and the Clyde, the only people who preserved anything of their Gælic features, a century after the Conquest, were the Galwegians, and these, though of a cognate race, appear to have been less the descendents of the ancient British population, than of the Pictish immigrants of the eighth century. Their intercourse with other districts was, from the nature of their position, extremely limited, and even after their nominal subjection to Scotland, they remained under the immediate dominion of their own lords.

In Lancashire the case was very different. So long as the "Terra inter Ripham et Mersham" remained a part of Northumberland, the communication with other parts of that state was indeed difficult, separated by a ridge of lofty moors which were not then rendered accessible by the skill and science of engineers; but the circumstances were completely changed when it was annexed to the same state to which the neighbouring county of Chester belonged. No greater obstacle then existed to the utmost freedom of communication, than a river easily passable at all points, in boats, and in its upper portion by fords or bridges. A little later, the same facilities which enabled Saxon enterprise to cross the Mersey into South Lancashire were extended to its further progress across the Ribble into Amounderness, when that district also was severed from the Northumbrian earldom, and placed under the central government of England. If in the Earldom of Carlisle, in which the authority of the central government was neither exercised nor acknowledged, the language and usages of the Britons had yielded to Saxon influence, it is not to be supposed that they would maintain their ground in Lancashire under circumstances so much less favourable to their perpetuation

THE TOWN OF LIVERPOOL

ITS COMPARATIVE AREA {SO FAR AS IT WAS COMPACTLY BUILT}

IN 1725, 1795 & 1854.



LIVERPOOL:

MEMORANDA TOUCHING ITS AREA AND POPULATION,

DURING THE FIRST HALF OF THE PRESENT CENTURY.

By J. T. Danson, Esq., F.S.S., Vice-President.

(Read on the 8th November, 1855.)

I.

The sources of information commonly referred to, as to the population of Liverpool, are two. There is the National Census, taken in 1801, and at intervals of about ten years ever since. This serves for the present century. And for the preceding century there is an account compiled for, and presented to, the Commissioners appointed in 1833, to enquire into the state of the Municipal Corporations of the country, and which was printed in the Appendix to their Report, published in 1835.

From the latter source we learn that the population of the town of Liverpool was, at eleven different periods, beginning in 1700, and ending in 1790, as follows:—

	Persons.	Shewing an apparent average annual addition of
In 1700...	... 5,715... ...	... ... —
1710...	... 8,168... ...	 245
1720...	...11,833... ...	 366
1730...	...12,074... ...	 124
1742	...18,000... ..	 493
1752...	...18,500... ...	 50
1766...	...25,787... ...	 520
1770...	...35,600... ...	2,473
1777...	...34,107... ...	... ...(a loss)
1786...	...41,600... ...	 832
1790...	..55,732... ...	3,533

In 1801, the Census gave for Liverpool a total of 77,653 persons, shewing, for the eleven years, 1790–1801, an average annual increase of 1,992 persons.

It does not appear upon what area, precisely, any of the eleven enumerations prior to 1801 were made. And from the apparent use of round numbers in four out of the eleven statements, we may fairly infer that some of them were based upon mere estimate, and were not the result of, or based

upon, any actual enumeration. The great irregularity of the rate of increase between some of the periods, exceeding what has been recorded as of ascertained occurrence under similar circumstances, also affords ground for suspecting the accuracy of the eleven statements; and as we have no reason for placing more reliance upon any one of the statements than upon any other, any suspicion raised by the irregularity of the results, tells, more or less, against the whole.

Not wholly without explanation, however, is this irregularity. Reference to cotemporary history, and especially to the history of the commerce of the port of Liverpool, reveals something like corresponding changes in the prosperity of the town.

It will be observed that the first remarkable increase of the population took place between 1752 and 1766; and that this was followed by a still greater increase between 1766 and 1770. The first of these dates marks the period at which it would appear that the Slave-trade began to be carried on largely by the merchants of Liverpool. The British share of this trade seems to have been most extensive about the year 1771. After that period it declined; the supply to the West Indies having so far overtaken the demand, as to reduce the selling price, and render the profits of the trade both smaller and less certain than before.

The decline of the Slave-trade had scarcely been ascertained, when the trade with the North American colonies was stopped by the outbreak of the war of 1775–83. Accordingly, we find the population of 1777 less than that of 1770; and at the next period (1786), three years after the trade was opened with the United States, the increase shewn is but small. Soon afterwards several causes combined to augment the trade of Liverpool. In September, 1786, a very liberal Treaty of Commerce was concluded between Great Britain and France; and it continued in force till war broke out between the two countries in February, 1793. And from 1783 to 1793, the shipping of Liverpool, which for some seven years previously had found in privateering the most inviting, if not the most profitable, form of employment, was fully engaged in carrying on a rapidly increasing trade, arising principally from the early but already rapid growth of the cotton manufacture, and stimulated by a degree of freedom in the commerce of Europe, such as had not been known before, and has scarcely been equalled since.

It forms, however, no part of my present purpose to ascertain the popu-

lation of Liverpool prior to the present century, or to deal with prior records, except in so far as these may throw light upon the more recent period. And having now scanned, though somewhat cursorily, such data as we possess of the growth of the population during the eighteenth century, we are enabled to mark a degree of coincidence between the figures relating to the hundred years 1701–1801, and the fifty years 1801–51 which is at least remarkable. If we accept, as nearly correct, the eleven statements already given for the former period, it appears that the population of the town was increased in the first fifty years of the century by about 250 per cent on its amount at the commencement. In the next fifty years, 1751–1801, it would appear to have been nearly the same. And in the third fifty years, 1801–51, it was also very nearly the same. Thus—

Population of 1700, by statement...	5,715
Add for apparent increase in one year	245
Apparent population in 1701...	5960
	3.5
Computed population in 1751	20,860
	3.5
The like in 1801	73,010
	3.5
The like in 1851	255,535

The numbers actually stated above, and by the census of 1851, being—

In 1752 ..... 18,500;——1801 ..... 77,653;——1851 258,236

Should the same proportion hold through the fifty years now current, the population in 1901 will be upwards of 900,000. In other words, that will be about the number of the inhabitants of Liverpool when the children of the present day, destined to live so long, shall have reached their fiftieth year.

II.

The town of Liverpool may be said to appear in the Census for 1851 in two forms. First is given the population of the *parish* of Liverpool; of which I may observe that its limits are coincident not only with those used for the Census enumeration, but also with those of the district established in 1836 for the registration of births, marriages, and deaths.

We have, also, in the previous five Censuses, the population of the same

district in 1801, 1811, 1821, 1831, and 1841. We have, therefore, six actual enumerations upon the same area, as follows :—

	Persons.	Shewing an average annual increase of
In 1801...	77,653	
1811...	94,376...	...1,672
1821...	118,972...	...2,459
1831...	165,175...	...4,620
1841...	223,003	...5,782
1851...	258,236...	...3,523

Here it would seem that the rate of increase was materially reduced between 1841 and 1851, as compared with the previous decennial periods —a result we are by no means prepared for, as indicating a corresponding abatement in the actual growth of the population of the town. But it is accounted for when we remember that we are not now dealing with the population of the town (properly so called), but with that of the parish ; and that the town has, undoubtedly, of late years, outgrown the limits of the parish. This enumeration, therefore, does not afford a complete view of the town in 1851; and, perhaps, not even in 1841. And as we have no reason for assuming that the limits of the parish were coincident with the limits of the town proper at any of the previous Censuses, we are compelled to reject these figures as unfitted, in their present form, to furnish a just conception of the population of the town at any period in the half century.

But Liverpool appears in the Census of 1851 in another form. The Registrar General has taken the population for 1851, and also for 1841, within the limits of the parliamentary and municipal borough. No enumeration within these limits was, or could have been, made in 1801, 1811, 1821, or 1831, as they were not fixed till the passing of the Reform Act, and the Municipal Corporation Act, between 1831 and 1841. But the Registrar General has supplied the omission by an *estimate* of the population existing in 1801, 1811, 1821, snd 1831, upon "nearly the corresponding area."

The results are :—

	Persons.	Showing an average annual increase of
For 1801...	82,295	
1811..	104,104...	...2,180
1821...	138,354...	...3,425
1831...	201,751...	...6,339
1841...	286,487...	...8,473
1851...	375,955...	...8,846

Here again we find the rate of increase less between 1841 and 1851 (in proportion to the previously existing population) than it was between 1831 and 1841.

And again we are reminded that the limits thus taken through the entire period of fifty years were not those of the town properly so called, and cannot even be supposed to have coincided with the real boundary of the town at any time within that period—seeing that extensive tracts of land which cannot be deemed to have formed part of the town are known to have existed, even in 1851, within the limits of the parliamentary and municipal borough.

The whole extent of the parochial area has been ascertained to be 2,220 acres. This is reduced by the necessary deductions for *water* (fixed by the estimate of Colonel Dawson, of the Tithe Commission, at the request of the Registrar General) to 1,560 acres.

The precise extent of the municipal and parliamentary limits referred to by the Register General, I have not been able to ascertain; but they would seem to be about 4,400 acres, thus :—

	Acres.
The Parish of Liverpool, (exclusive of water,) ...	1,560
The Township of Everton	700
The Township of Kirkdale	702
The Township of Toxteth Park, (part,) estimated,	800
The Township of West Derby, (part,) estimated,	680
	4,442

Both these areas are, however, liable to an objection which I cannot but deem insuperable. Both are uniform through the whole period. Both, therefore, are based on the assumption that the population of the town was spread over the same area during the entire fifty years—an assumption notoriously at variance with the facts. Both, therefore, must be rejected.

III.

Having rejected the areas assigned to the town at successive periods, by the only authorities to which we can look for information touching the population, we have now to seek some other, more consistent with the principle on which the rejection has been made. That principle is one too

simple and obvious for dispute. It is that the area of the town must, in the absence of evidence to the contrary, be deemed to have increased with the population. Whence we are bound, in view of the returns before us, which undoubtedly indicate a constant increase of the population, to assign to the town, at each decennial period, some reasonable increase of area. How this may be done, with the materials before us, and with the nearest apparent approximation to accuracy, is the problem I have to submit to you this evening.

I shall first lay before you the data on which we have to proceed; then describe the method I have adopted to elicit the required information; and, finally, state to you the result.

But first let me define what I mean by a term which occupies a very prominent and important place throughout this paper: let me say what I understand by the word Town. I assume, then, that a Town is an aggregate of the general population of the country which differs from the rest, so far as we are at present concerned with it, only in *its greater density.*

Of the 624 districts into which, for the purpose of the Census enumeration of 1851, the whole of England and Wales was divided, I find that one (East London) was peopled at the rate of 185,751 persons to a square mile, or about 290 to an acre; while another (Bellingham, in Northumberland,) had only 18 to the square mile. These were the extremes; they were in point of density, as more than 1,000 to 1; and the other 622 districts exhibit nearly every degree of density between these two. The question which now presents itself is this: What degree of density shall be held to constitute "Town," as distinguished from "Country"? The average density of the Parish of Liverpool, in 1851, was about 165 to the acre. But of the seven sub-districts into which the Parish is divided, some had a higher, and some a lower, density than this. And it is probable, that had the parts of the Town lying beyond the limits of the Parish been separately enumerated, they would have been found to possess a density lower than the average of the Parish.

This brings us to a further consideration. We know, from observation, that beyond the limits of all our towns, however these limits may be laid down, there is a surrounding district, more or less extensive, which, though it be not included in the town, can scarcely, with propriety, be deemed "country." To these districts we are accustomed to apply the term

"suburbs." Further, it does not admit of dispute, that the suburbs belong much more to the town around which they are gathered, or rather from which they emanate, than to the country, with which, by a too narrow definition of the word "town," they would be confounded.

The results of any adequate consideration of this topic could not be expressed here without carrying us beyond the scope of the present paper. The growth of towns in England and elsewhere, its methods, its causes, and its consequences, has not yet received the care it deserves from those who are disposed to seek in the best known and least disputable phenomena of human society the surest and safest indications of a wise general polity. Familiarity, without attention, deadens the observing faculties; and the dwellers in towns are yet less observant in this direction than at first sight would seem likely. It is not disputed that a square yard of stone wall, covered in the course of half a century with patches of moss and lichen, affords a study not unworthy of an adequate exercise of the human faculties. Nor can it be disputed that a map of any part of Europe of the same size, accurately shaded to represent the growth of the town population during a similar period, affords a spectacle of similar, but higher interest—and one even more worthy of scientific investigation. To be successful in the study of either we must approach it in the same spirit. The particular facts will be of a very different order; yet discreetly to use them, in tracing the effects we see to their causes, demands precisely the same methods of reasoning.

But the work is not yet begun. Hence I am compelled either to abandon my present purpose, or to proceed by a method more or less empirical. The former would give no result. The latter may give one as good as can at present be attained. And, its basis being obvious, it cannot have any deceptive effect.

After well considering, then, all the circumstances which seem to me to bear upon the meaning of the word "town," I have assumed that to justify its application there should be, upon the whole area in view, an average of not less than 100 persons to the acre.

For the suburbs of a town I assume a similar average of ten persons to the acre.

The method of applying this definition I shall have occasion to refer to presently.

The data now before me consist of a return of the area and population of every "enumeration district" near enough to the parish of Liverpool to have contributed, with any degree of probability, to the formation of the town or its suburbs at each of the six enumerations of 1801, 1811, 1821, 1831, 1841, and 1851.

Those I have selected consist of twenty-one townships besides the Parish of Liverpool—thirteen on the Lancashire and eight on the Cheshire side of the Mersey. For it will be observed that my definition rests simply upon the density of the aggregation; and, on considering the nature of the division effected by the River Mersey, I have seen no reason for excluding from view, as part of the town, whatever must be deemed so in fact, whatever it may be in name.

These twenty-one townships are shown in the following table:—

DISTRICT.	Total Area, exclusive of Water.	Computed distribution of area in 1851.		
		Town.	Suburb.	Country.
	Acres.	Acres.	Acres.	Acres.
In Lancashire:—				
Parish of Liverpool	1560	1560	—	—
Kirkdale Township	702	48	500	157
Everton ,,	700	210	492	—
West Derby ,,	6123	250	500	5373
Wavertree ,,	1796	—	311	1485
Toxteth Park ,,	2333	556	506	1270
Bootle ,,	1171	—	352	819
Waterloo ,,	1886	—	152	1734
Garston ,,	1628	—	194	1434
Great Crosby ,,	2117	—	134	1983
Litherland ,,	1179	—	166	1013
Much Woolton Township	930	—	315	615
Little Woolton ,,	1200	—	41	1159
Huyton ,,	1630	—	48	1582
Totals in Lancashire	24955	2624	3705	18624
In Cheshire:—				
Birkenhead Township	900	188	500	212
Tranmere ,,	1174	10	500	664
Oxton ,,	802	—	160	642
Claughton ,,	436	—	49	387
Liscard ,,	896	—	365	531
Poulton-Cum-Seacombe	669	—	271	398
Higher Bebbington	899	—	102	797
Lower Bebbington	1052	—	96	956
Totals in Cheshire	6828	198	2043	4587
Totals in both Counties	31783	2822	5748	23211

This places nearly one-fourteenth part of the *Town* on the Cheshire side of the Mersey in 1851. At the same date a little more than one-third of the *Suburbs* appear on the same side. But it is also obvious that a large proportion of these Cheshire suburbs were, (prior to 1851,) more likely to form new additions to the Town area than to continue extending in the suburban form. And this tendency has since received a new impetus in the renewal of the Birkenhead Dock Works.

The mode of computation by which the figures in the last three columns of this table were elicited from the data afforded by the Census of 1851 is easily explained.

The twenty-one townships selected adjoin Liverpool, and were each taken as presenting a higher density of population than seemed consistent with the assumption that it was entirely "country." Here, however, it was necessary to fix upon some degree of density, excess of which should bring the examined townships within the list. And, in approaching this part of my task, I observed that though there might possibly have been an equality of density in the town population of England during the fifty years in view, no such equality could be consistently looked for in the rural districts, especially those in the immediate neighbourhood of towns. Hence the necessity for a maximum *country* density as a basis, and one that should increase at every decennial period. After well considering the claims of simplicity and of probable accuracy, I adopted the following method of fixing this test. I took, first, the aggregate population (as given by the Registrar General, upon a basis which I cannot deem very accurate, but which may be sufficiently so for the present purpose) of the fifty-two towns enumerated in the two counties of Lancashire and Cheshire in 1851 The fifty-two towns contained a total population of 1,572,316 persons. Deducting this from the total population of the two counties at the same time (2,490,817) we have a remainder of 918,501, for the rural population. This, taken in connection with the space occupied, may be deemed to afford an approximate notion of the density of the country population at that period; and one which is probably below, rather than above, the actual density in the parts nearest the towns. Then, as to the rate of increase of the country density, I find that had Lancashire and Cheshire been peopled in 1851 only at the rate common to all England and Wales (including the towns) they would have contained rather fewer persons altogether, than is thus attributed to their country parts alone. In other words, there is, in

the average density of England and Wales, a close analogy to that of the country parts of Lancashire and Cheshire (as stated for 1851 by the Registrar General). And, in the absence of any better guide to the density of the rural districts of Lancashire at previous Censuses, I assume that something not very far removed from the same analogy has existed throughout the fifty years in view. Acting on this assumption, I take for the maximum average density of the country immediately surrounding the suburbs of Liverpool—

In 1801	... ...	25	persons per square mile
1811	... ...	30	,, ,,
1821	... ...	35	,, ,,
1831	... ...	40	,, ,,
1841	... ...	45	,, ,,
1851	... ...	50	,, ,,

It may be objected that, while admitting an increasing density in the surrounding country I assume an uniform rate for the suburbs. This I do, because I see reason for believing that the tendency to increased density in the suburbs, for the time being, has been constantly counteracted by an increasing facility of communication. And as the leading causes of the formation of suburbs are intimately and obviously allied with the facility of transit thence, to and from the central parts of the town, it may even be doubted whether the average density of population in the suburbs of our larger towns has not, during the last half century, rather diminished than increased.

With the densities thus assumed to be due, respectively, to town, suburb, and country, each district, as presented by each census, has been examined in succession, and the excess apparent beyond the average due to a country district put aside as indicating the existence of a corresponding extent of suburb, or town, or both. The extent of each is at once determined by the amount of the excess. Continuing this process through the successive decennial statements, the assumed growth of the suburban portion of each district is stayed whenever it is found to have covered an area of 500 acres: that being deemed, from observation, about the point at which the formation of the denser aggregate of a town would commence on the interior borders of the suburb. The suburb, then, being maintained at this extent, so long as the extent of the district permits it, any further surplus is carried to the formation of an addition to the central *town*, at the average rate of 100 persons to an acre. And so on, till every

district in the list has been examined, and computed, for each of the six decennial enumerations.

The net results may be stated, shortly, as follows :—

YEAR.	AREA COVERED BY THE TOWN AND SUBURBS.		
	In Lancashire.	In Cheshire.	Total.
	Acres.	Acres.	Acres.
1801...	1,990	—	1,990
1811...	2,590	12	2,602
1821...	3,172	72	3,244
1831...	3,954	454	4,408
1841...	4,944	1,327	6,271
1851...	6,329	2,241	8,570

POPULATION OF THE TOWN AND SUBURBS.

YEAR.	TOWN.			SUBURBS.			TOTAL.
	Lancashire.	Cheshire.	Total.	Lancashire.	Cheshire.	Total.	
1801...	68900	—	68900	13010	—	13010	81910
1811...	87600	—	87600	17140	120	17260	104860
1821...	121800	—	121800	19540	720	20260	142060
1831...	176800	—	176800	21860	4540	26400	203200
1841...	203700	3100	206800	29070	12960	42030	248830
1851...	262400	19800	282200	37050	20430	57480	339680

The six decennial statements afford us five equal intervals, or periods of increase. And by marking the numbers added in succession, in each of these intervals, we obtain a somewhat clearer view than that afforded by the figures as they stand in the above table, of the varying rates of progress.

For instance, for the whole *Town* (omitting the suburbs) we find that the numbers added were :—

In the First decennial interval ... ... 18,700 persons.
Second ,, ... 34,200 ,,
Third ,, ... 55,000 ,,
Fourth ,, ... 30,000 ,,
Fifth ,, ... 75,400 ,,

Here there is a remarkable defalcation in the fourth period, or between 1831 and 1841.

Dealing similarly with the *Suburbs*, we find a different result; and one which accounts, in part at least, for the irregularity observed in the progression of the *Town*. The numbers added being :—

In the	First period	4,250
	Second „	3,000
	Third „	6,140
	Fourth „	15,630
	Fifth „	15,450

Here we have a considerable falling off in the second period, and a small one in the fifth. But we have a very large increase in the fourth : indicating the extensive formation of new suburbs between 1831 and 1841, the interval during which the growth of the Town proper appears to have been proceeding at a slower rate than usual.

Increased facility of communication across the Mersey has evidently changed the previous direction of the town's growth; and it would appear that the centre of the town, which down to 1831 tended to move *from* the river, has since been fixed; and is unlikely to move further in that direction.

The materials are too imperfect to warrant much further elaboration. The superficial form in which I have presented them is undoubtedly open to serious objections, in a scientific point of view. It may render somewhat more obvious, and somewhat more available, to those who do not look into the original records, the data we possess; but no method of treatment can cure the defects of these data, or educe from them the means of closely examining the actual growth of the town.

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ON THE SAXON ELEMENT IN THE DICTION OF ENGLISH POETRY.

By David Buxton, Esq.,

PRINCIPAL OF THE LIVERPOOL SCHOOL FOR THE DEAF AND DUMB.

(Read 1st November, 1855.)

The subject announced in the title of this paper, appears to me to present itself in two aspects, which are of equal interest. To the lover of literature, it is interesting, in its connexion with poetry; and to the philologist in its relation to language. One whose daily occupation it is to give a knowledge of the English language to those whose physical deprivation causes them to be utterly ignorant of all language, is naturally led to make himself acquainted, to some extent, with the sources and the materials of our mother tongue; and when, in the precious intervals of a busy life, he has been able to steal aside from the track of necessary duty, to snatch however transiently the joy which literature affords, it has only deepened the conviction which many will share with him, that there are no richer delights to be found anywhere, than in the ever "fresh fields and pastures new"* of English poetry.

I lay claim to no other qualifications for dealing with the present subject than such as these pursuits have afforded.

Now I believe that there passes current in the world a large quantity of respectable letter-press, under the name of poetry, which has not the smallest right to that honourable designation. We certainly have verse of every style, and upon every subject: as moralizing, it is most unexceptionable; as satire, it is most pungent; in its prosody, it is correct to a hair's breadth; its rhymes may be such as Pope himself might envy; and yet it is a complete misnomer to call it poetry at all.

If the theory which I shall enunciate is correct, it is a mistake to suppose that any work is necessarily a Poem, because it is written in rhyme, or in

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* Milton. *Lycidas.*

blank verse ; or that poetry has any necessary connexion with the trick of putting a nominative a dozen lines from the verb it governs, and filling up the intervening chasm with high-sounding words, woven into dislocated verse ; or that there is any poetry in words, as such, apart from the idea which they appropriately embody, or the objects which they fitly describe.

The faults here indicated are perhaps not so current now as they were formerly. We have some lingering specimens of these vicious styles amongst us still, but they were carried to their greatest lengths by the writers of the Didactic School, who, aiming at a compromise between poetry and prose, succeeded in producing something which was neither the one nor the other. But, let us not deceive ourselves on this point. Though we may have fair ground for congratulation that this school of writers has almost become extinct amongst us, we must not, therefore, conclude that we are faultless. If it is the glory of some periods to have a title to greater eminence, and higher renown, than can be claimed for other times, it is not the less certain, that every age has its own characteristic failings. One observant critic will tell us, and with truth, that almost every grade, both of topic and of treatment, ranging between the familiar and the abstruse, is followed by our living writers ; and another will add—what can scarcely be denied—that not only is this so, but these extremes are run out to their furthest limits, until, in the excess of our passion for common things, we find men singing in the slang of outlaws, and others soaring so very far into the regions of transcendentalism, that minds of ordinary stamp can only "toil after them in vain," and leave them at last, in sheer despair of following, to chant their unintelligible strain in their own way, to their own unalloyed, because unshared, gratification. So much for the affectations of fashion, and the mannerisms of the day. But poetry is independent of all these. Though sometimes "cribbed, cabined, and confined," and held down in ignoble slavery to the caprices of the time, yet there is that within her which speaks thrillingly and lives immortally—and she is beautiful even in her chains. How much the more, then, when fitly habited and adorned.

> .....a native grace
> Sits fair proportioned on her polished limbs,
> Veiled in a simple robe, their best attire
> Beyond the pomp of dress : for loveliness
> Needs not the foreign aid of ornament,
> But is, when unadorned, adorned the most. *

* Thomson's Seasons.

Yet it is not in words that the magic of poetry lies. It is in the ideas which are associated with those words. Poetry resides not in the outward form or dress of any man's conception, but in the idea so conceived. John Clare, the peasant-poet of Northamptonshire, has borne testimony to this truth in one simple and beautiful couplet—

> I found the poems in the fields ;
> I only wrote them down.

If, therefore, the original idea, as it arises in the mind, is not, in itself, poetical, no powers of language, or supposed charms of diction, can ever make it so. As it is birth, and not dress or manner, which makes an Englishman, so it is the native thought, which is, or is not, poetical. No assumed dress or form can give to any mental conception a character which it does not naturally possess. Poetry is an essential, not an accidental, property. But it is absolutely requisite to the due development of poetic thought, and for investing it with full expressiveness and beauty, that it should be clothed in befitting language. The thought which would be striking for its impressiveness, or admirable for its beauty, may be made ineffective or ludicrous, either by the puerility or the pompous extravagance of its diction. What poetry seeks from language, is adequate and graceful expression. This being given, the feeling which burns in the heart of the poet will soon be responded to in the hearts of other men, and the kindling light of genius be felt and reflected in minds happily susceptible of those influences which make "the poet's pen" more potent than the wand of the magician.

The proposition which I shall endeavour to prove on this occasion is, that the proper dress of English poetry is that portion of the English tongue which is commonly distinguished and known as the Anglo-Saxon. If I were engaged in a strictly etymological enquiry, it would be my duty to analyse the composite character of our language more rigidly, and to define its lines of separation more closely, than is at present necessary. For though our vocabulary bears obvious marks of having gained its present flexibility and fulness by what it has drawn from *many* different sources, it is sufficiently accurate for our present purpose to take its main constituents to be two, and to assign the Norman conquest as the dividing point between them. The language which at that time began to be engrafted upon the original Anglo-Saxon, was adopted from the Latin, either immediately, and in tolerable purity, or through the Normans and French, with

the modifications of form which they had introduced. These two main tributaries of our language, I shall speak of as the Anglo-Saxon and the Classical, and shall endeavour to show that the older, or Anglo-Saxon element, is emphatically that of poetry, as best adapted to the work of addressing the fancy, and appealing to the feelings, while the other is found to be the most suitable in all which concerns the peculiar province of the intellect. And the reason is this:—like the feelings themselves, the language of feeling never alters. "One touch of nature makes the whole world kin," and while the restless intellect of man is making new discoveries, achieving new conquests, and perpetuating them in the advances of science, and the progress of civilization, the human heart remains still and ever the same. Through every stage of social progress—in the midst of the constant changes and chances of this mortal life, that source of sympathy and fount of feeling remains unchanged; and the language which is the exponent of those feelings partakes of the same unchanging character. But that language which describes events and circumstances—which records the discoveries of science, and conveys the lessons of philosophy, must be expected to change its form, and to enlarge its scope, as new events transpire, and circumstances alter, and science achieves new triumphs, and philosophy extends her researches, and gathers from each new field of observation new motives to duty, and fresh supplies of deep and solid wisdom. Poetry, again, has to do with details; science with generalisations. For the former, simple words, expressive of simple ideas, are necessary, and such are most commonly of Anglo-Saxon derivation. For the latter, such words are needed as are capable of combination—as the Latin and Greek—by which complicated ideas may be united in a single word, at once significant and concise. For these two distinct purposes, the two main branches of our language seem signally fitted, and I hold very strongly the opinion, upon grounds to be shewn presently, that any heedless or ignorant admixture of the two, without reference to this principle, tends to lower the purity, and weaken the force of language, and to lessen the peculiar charms of its respective constituents.

No stronger proofs could be adduced than those which are to be found in the Sacred Writings. But these I forbear to press into a discussion upon a purely literary topic, though I cannot pass without naming Psalms CIV. and CXXXIX., Eccles. XII., Isaiah XL.; the history of Joseph, the appeal of Ruth, and that night vision in the book of Job which Burke refers to, as a

passage of "amazing sublimity."* In the Lord's Prayer, too—as we learned it from beloved lips in infancy—there are not six words, which are not immediately and directly derivable from Anglo-Saxon. The Prayer Book of the Church of England bears also similar testimony. Those parts of it which have been added, on occasion, and to meet particular contingencies, may almost in every case be distinguished from its original contents, by the more extensive prevalence in them of a foreign classical diction. Theology requires such a diction, but Devotion does not. What, I would ask, has that noblest of all hymns—the Te Deum—or that most devout of all supplications—the Litany—lost of original significance and force in that Anglo-Saxon version with which we are so familiar?

But we will turn from these examples to the illustrious roll of English poets; and by the light of their undimmed and still unwaning lustre, examine the theory which I have to vindicate. Wordsworth remarks that "the affecting parts of Chaucer are almost always expressed in language pure and universally intelligible, even to this day."† The same cannot be said of his descriptions of persons and customs; and the reason why the language proper to feelings has remained unaltered, while that which is appropriate to other matters has changed, has already been given. Sir Philip Sidney said of the old ballad of Chevy Chase, "that he never heard it, that he found not his heart moved by it more than with a trumpet."‡

Campbell tells us, however,§ that "the prevailing fault of English diction, in the fifteenth century, is redundant ornament, and an affectation of Anglicising Latin words." Nor can we wonder at this, when we remember of how many co-operating causes it was the effect. The Crusades, and the extended commerce to which they led, had opened the civilisation of the East, to the semi-barbarism of the West. During the long period in which the Turks threatened Constantinople, there was a constant influx of the learned of that metropolis into Italy, where the love of ancient learning revived under their auspices; and when at last, A. D. 1453, the imperial capital of the East fell into the hands of the Mahomedan conquerors, the treasures of literature, which had so long been accumulated there, were dispersed throughout Christendom, and the invention of printing soon

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* On the Sublime and Beautiful, Part II., Section iv.

† Note to Preface, *Lyrical Ballads*.

‡ *Defence of Poetry*, quoted in Percy's Reliques, vol. i.

§ Essay on English Poetry, p. 93.

placed them within the reach of the studious in every country. Nine new colleges had been founded at Oxford, and an equal number at Cambridge, in the course of the thirteenth and fourteenth centuries; the same period also witnessing the establishment of the foreign universities of Padua, Naples, Toulouse, Montpelier, Salamanca, Orleans, and some others of less note. In the two succeeding centuries, the movement not only continued, but was urged on by the circumstances just mentioned. And it was then, too, that our Grammar Schools sprang into existence. That of St. Paul's, London, was founded by Dean Colet, the friend of Erasmus, in 1510; that of Manchester, by a Lancashire worthy, Hugh Oldham, bishop of Exeter, in the same year;* and during the reigns of Henry VIII., Edward VI., and Elizabeth, 1509–1603, a very large proportion of those now in existence were established, some by the sovereign, others by private individuals. Among the former are the Westminster, Shrewsbury and Birmingham Schools, and Christ's Hospital; and among the latter, besides the foundations of Colet and Bishop Oldham, just mentioned, the noble schools of Harrow and Rugby, and that of Merchant Taylors' Company, in London, as well as others in the smaller towns throughout the kingdom, almost every one of which has, at some time or other, sent forth its pupil into the world, to play therein an honourable part, and to become thereafter one of the nation's illustrious ones. Bishops and priests, soldiers and statesmen, philosophers and poets; men whose names are watchwords, breathing

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* The Boteler Grammar School, at Warrington, was one of the earliest of these Foundations, having been established in 1526. See the paper by J. F. Marsh, Esq., in the present volume. The total number of Grammar Schools in England and Wales, appears by the reports of the Charity Commissioners to be 705, and their total annual income £167,761. The following table taken from the "*Digest of Schools and Charities for Education*," which forms part of the Commissioners' Report, shews the number of Grammar Schools founded in successive reigns.—It is extracted from the *Educational Expositor* for November, 1855:—

Henry II 1 (1154–1189)	Elizabeth 112 (1558–1603)	Anne 29 (1702–1714)
Richard II 2 (1377–1399)	James I 70 (1603–1625)	George I 39 (1714–1727)
Henry VI 3 (1422–1461)	Charles I 54 (1625–1649)	George II 26 (1727–1760)
Henry VII 7 (1485–1509)	Commonwealth 33 (1649–1660)	George III 22 (1760–1820)
Henry VIII 36 (1509–1547)	Charles II 65 (1660–1685)	George IV 1 (1820–1830)
Edward VI.. .. .. 48 (1547–1553)	James II 15 (1685–1689)	Unknown 97
Mary 22 (1553–1558)	William and Mary .. 23 (1689–1702)	Total 705

courage into the breast of the hero, and inspiration into the spirit of the sage; these were once the hard-working pupils of England's Grammar Schools. Not to wander from our present subject, just glance at the list of poets. From Westminster School have come Ben Jonson and Dryden, Cowley and Cowper, Churchill and Southey. Milton was educated at St. Paul's; his witty contemporary, the author of *Hudibras*, at Worcester;* Shakspeare at Stratford; Sir Philip Sidney at Shrewsbury; Addison, Dr. Johnson, and Garrick, at Lichfield; Coleridge and Charles Lamb at Christ's Hospital: and Wordsworth received a portion of his early training at the little village Grammar School of Hawkshead, in this county. And now, to connect this apparent digression with our present subject.

The object of these schools was to give a classical education: to make that general which Henry VIII. had already made fashionable, by his own attainments, and by having his children thoroughly instructed in the ancient languages. Sir John Cheke, Regius Professor of Greek at Cambridge, had been Preceptor to King Edward, and Roger Ascham to Queen Elizabeth. If, therefore, the prevailing fault of the fifteenth century was, as Campbell states, the affectation of Anglicising Latin words, such a fault was not likely to be amended in the following century. That, on the contrary, it greatly increased, we know to be historically true. A well-known testimony is borne to this fact by the very competent authority of Sir Walter Scott, who, in his novel of the *Monastery*, avowedly satirizes, in the character of Sir Piercy Shafton, the current language of fashionable life in the time of Queen Elizabeth. Yet the reign of that sovereign stands pre-eminently illustrious in the annals of English poetry; and the two greatest names in the splendid array of Elizabethan poets are those of men who may be said to have absolutely turned their backs upon the fountains of classic lore, and drawn only from the "well of English undefiled." That Shakspeare brought with him from the Grammar School at Stratford "little Latin and less Greek,"† is no unfortunate circumstance for the English language, and for English poetry; and that Spenser, after once contemplating so great an innovation as the abolition of rhymes, and the introduction of hexameters into English verse, should finally not only adopt Anglo-Saxon as the vehicle of his thoughts, but should avowedly imitate the diction of times preceding his own, shews that he, too, turned away from the new wine which he had

* *Comus* was first acted, and *Hudibras* was written, at Ludlow Castle.
† Ben Jonson.

more than tasted, "saying the old is better." And what was thus effected for the diction of poetry, by the genius and example of these two great men, was yet more remarkably and successfully accomplished for the language itself by our noble English Bible. That which was solid and fixed in the character of our vernacular was thus taken from the lips of the people, and imperishably recorded; and much besides, which was in a state of transition, and might soon have become obsolete, was arrested, and thus saved from being swept away before the invasion of a new and pedantic phraseology. It was as if,—to borrow an illustration from that beautiful art, of recent discovery, which transfers and embodies into picture not only the bold, immutable outlines of the landscape, but seizes too its lighter graces, and catches the very shadows as they fly,—thus it was that Tyndale and Coverdale first of all, and the translators of our present version after them, not only employed and recorded in permanent shape that part of our language which was in daily use, but those more fleeting characteristics which are analogous to the passing shadows in the view, or the momentary play and expression of the features,—all these were seized in their passage, and written in light, as with a ray from heaven, and the result was that glorious picture, our peerless English Bible. If any man would see what poetry is, and what it is not, and would judge of the capability of our Anglo-Saxon tongue, let him turn from a passage in Dr. Johnson, Young, Akenside, or Thomson, or in the works of some who might be named among our living authors, to a chapter in Isaiah, or to one of the Psalms. There he will see how the sublimest truths which can address man's intellect, and the most touching incidents which can affect his heart, are set forth in the plainest and simplest language. They seek no embellishment from words; the stirring grandeur, or the moving pathos of the subject, appears all the more vividly for the pure simplicity of its vesture.

But now to turn to those illustrations which these observations have too long interrupted. We will first quote Spenser—that "prince of poets in his tyme"—and it should be sufficient to refer to his description of the "gentle Una with her milk white lamb," in the first Canto of his *Faery Queene*, and again to that passage in Canto III., where it is said—

> Her *angel's face*
> As the great eye of heaven shyned bright,
> And made a sunshine in the shady place,
> Did never *mortal* eye behold such heavenly *grace*.

Out of nearly thirty words in this passage, there are just four of foreign

derivation; and not to dwell too long upon a single work, or a single author, I will just quote two of the stanzas in the same writer's exquisite *Hymn of Heavenly Love.*

> Yet, O most blessed spirit! pure lampe of light,
> Eternall spring of grace and wisedom trew,
> Vouchsafe to shed into my barren spright
> Some little drop of thy celestiall dew,
> That may my rymes with sweet infuse imbrew,
> And give me words equall unto my thought,
> To tell the marveiles by thy mercie wrought.
>
> O blessed Well of Love! O Floure of Grace!
> O glorious Morning Starre! O Lampe of Light!
> Most lively image of thy Father's face.
> Eternal King of Glorie, Lord of Might,
> Meeke Lambe of God, before all worlds behight,
> How can we thee requite for all this good?
> Or what can prize that thy most precious blood?

A close examination of these passages will shew how little the author owes to a classic diction; how capable he proved the older English tongue to be, as an exponent of devotional and poetic thought. Turn now to Shakspeare, and see if it was necessary to the expression of his vivid thoughts, that he should escape from the poverty of his native language, and become a dependant upon the wealth of other tongues. Our examples, however, must be short and few. First glance at the night scene in the *Merchant of Venice:*—

> How sweet the moonlight sleeps upon this bank—
> Here will we sit, and let the sounds of music
> Creep in our ears: soft stillness and the night
> Become the touches of sweet harmony.

Again in *Henry VI.:*—

> The gaudy, blabbing, and remorseful day
> Is crept into the bosom of the sea.

And the description of the River, in the *Two Gentlemen of Verona:*—

> The current, that with gentle murmur glides,
> Thou knowest, being stopped, impatiently doth rage;
> But when his fair course is not hindered
> He makes sweet music with the enamel'd stones,
> Giving a gentle kiss to every sedge
> He overtaketh in his pilgrimage;
> And so by many a winding nook he strays,
> With willing sport to the wild ocean.

Besides these, which seem sufficient for the purpose, I had marked for quotation the apostrophe to Mercy, in the *Merchant of Venice,* Wolsey's Farewell to Power and Dignity, the passage in *Macbeth*, beginning—

> "To-morrow, and to-morrow, and to-morrow,"

with some others. But time prevents my quoting them at length, or making comments as I proceed. A close observation of the passages read will shew that the diction is that which I have called Anglo-Saxon, to the almost entire exclusion of those words which are of classical derivation.

Milton, though so eminent a classic, and though *Paradise Lost* was formed upon the best ancient models, and his declared purpose was to make an innovation upon English practice, by setting an example,—"the first," he says, "in English,—of ancient liberty recovered to Heroick Poem, from the troublesome and modern bondage of Rhyming,"* has yet clothed some of his finest thoughts in that native language, which was the theme of one of his earliest poems. The description of Evening in the Fourth Book of Paradise Lost—

"Now came still evening on," &c.

and that exquisite speech of Eve's which follows it—

"With thee conversing, I forget all time," &c.

are strongly illustrative of the point we are arguing. So also is the opening speech in *Samson Agonistes*, on his blindness; in contrast to which might well be placed the opening of Book III., in Paradise Lost, beginning, "Hail, holy light," which, with the exception of a few occasional lines, seems to be at once the least poetical and the least intelligible passage in the poem; and that simply from its faulty diction. The Song on May Morning, *Comus*, and the smaller poems, would furnish us with corroborative examples in abundance. Milton was the contemporary of the metaphysical poets; and early in his career seems to have been ambitious of a place amongst them. That despicable school was the product of the extension of classical learning which followed the Reformation, and of the access thereby given to the metaphysical disquisitions of the schoolmen of the middle ages. It would be hard to find, anywhere, more of the common-place and the nonsensical in the garb of verse, than in works of this class; yet some of those writers had a relish for true poetry, and have left behind them some evidences of their powers "not utterly unworthy to endure." Here is a specimen from Francis Quarles, in simple native English:—

Can he be *fair*, that withers at a blast?
Or he be *strong*, that airy breath can cast?
Can he be *wise*, that knows not how to live?
Or he be *rich*, that nothing hath to give?
Can he be *young*, that's feeble, weak and wan?
So *fair*, *strong*, *wise*, so *rich*, so *young* is Man.

* Preface on "The Verse."

So fair is Man, that Death (a parting blast)
Blasts his fair flower, and makes him *Earth* at last;
So strong is Man, that with a gasping breath,
He totters and bequeaths his strength to Death;
So wise is Man, that if with Death he strive,
His wisdom cannot teach him how to live;
So rich is Man, that (all his debts being paid)
His wealth's the winding sheet wherein he's laid;
So young is Man, that (broke with care and sorrow)
He's old enough to-day, to die to-morrow;
Why bragg'st thou then, thou worm of five feet long,
Th' art neither fair, nor strong, nor wise, nor rich, nor young.

The seventeenth century produced a noble array of philosophers—but few poets. In the next generation, the attempt was made to unite the pursuits of both, and that School of Philosophical Poetry sprang up, of which Pope was the founder, and the *Essay on Man* the chief result. This influence continued to operate, with slight modifications, until nearly the commencement of the present century. Wordsworth then set himself to conquer it, but for the time he was foiled. To him, however, and to his friends, Coleridge, Southey, and Scott, do we owe, in a great measure, the increased use which the simple and expressive language of our Anglo-Saxon forefathers has gained in current speech and writing. Take the very first poem in the works of the Poet-Sage of Rydal:—

My heart leaps up when I behold
A rainbow in the sky;
So was it when my life began;
So is it now I am a man;
So be it when I shall grow old,
Or let me die!
The Child is father of the Man,
And I could wish my days to be
Bound each to each by natural piety.

The two last words are derived from the Latin, but there is not another in the whole poem which is not Anglo-Saxon.

Then there is the affecting little story, "We are Seven," the Sonnet on "Milton," and that composed on Westminster Bridge:—

Earth has not anything to show more fair:
Dull would he be of soul who could pass by
A sight so touching in its majesty:
The city now doth like a garment wear
The beauty of the morning: silent, bare—
Ships, towers, domes, theatres, and temples lie
Open unto the fields, and to the sky,
All bright and glittering in the smokeless air.
Never did sun more beautifully steep
In his first splendour, valley, rock, or hill;
Ne'er saw I, never felt, a calm so deep!
The river glideth at his own sweet will;
Dear God! the very houses seem asleep;
And all that mighty heart is lying still.

It will be observed here that most of the natural objects have vernacular names, while those which are artificial have classical ones. I shall only add one more extract from Wordsworth—the description of the *White Doe of Rylstone*:—

White she is as lily of June,
And beauteous as the silver moon,
When out of sight the clouds are driven,
And she is left alone in heaven;
Or like a ship some gentle day,
In sunshine sailing far away;
A glittering ship that hath the plain
Of ocean for her own domain.

A similar passage from Dryden, from the opening of the *Hind and the Panther*, I will here cite, though out of chronological order. Dryden was the lineal predecessor of Pope: like him, he was the poet of artificial life rather than of nature, and his testimony is therefore the more valuable:—

A milk-white Hind, immortal and unchang'd,
Fed on the lawns, and in the forest rang'd;
Without unspotted, innocent within,
She feared no danger, for she knew no sin.
Yet had she oft been chas'd with horns and hounds,
And Scythian shafts; and many winged wounds
Aimed at her heart; was often forc'd to fly,
And doomed to death, though fated not to die.

Though there are several words of Latin derivation in this quotation, they bear a very small proportion to the whole, and there is nothing in Dryden which breathes a finer strain of pure and simple poetry. If we had time to examine the works of other writers belonging to the same school—Gray, Collins, Goldsmith, Cowper—we should find ample evidence to the same purpose. But we must return to the contemporaries of Wordsworth. Coleridge somewhere defends himself against the supposition that he was a full believer in the poetical creed of his friend; but along with other benefits which he wrought, he certainly helped, by his example, in a very eminent degree, to purify our poetry from the jargon of the philosophico-poetic school. I will first quote from the *Ancient Mariner*:—

To walk together to the kirk,
And all together pray,
While each to his great Father bends,
Old men, and babes, and loving friends,
And youths and maidens gay!
* * *
He prayeth best, who loveth best,
All things both great and small;
For, the dear God that loveth us,
He made and loveth all.
* * *

He went like one that hath been stunned,
And is of sense forlorn :
A sadder and a wiser man,
He rose the morrow morn.

For all the purposes of this passage, any other tongue than the Saxon might almost as well have never existed ; and so in *Christabel* :—

The night is chill ; the forest bare ;
Is it the wind that moaneth bleak ?
There is not wind enough in the air
To move away the ringlet curl
From the lovely lady's cheek ;
There is not wind enough to twirl
The one red leaf, the last of its clan,
That dances as often as dance it can,
Hanging so light, and hanging so high,
On the topmost twig that looks up at the sky.

And the exquisite ballad of *Genevieve* gives further testimony of the same kind. But it may be thought that though our primitive language is adequate to the expression of simple ideas, and to the happy description of natural objects, it is wanting in force, and would fail to express strong emotions, or to develope nobler images. There are numerous passages in Coleridge which would prove the contrary ; but I prefer to take an example from a very different author, and one who, it might be thought, would rather militate against the theory I am advocating. If any man ever ignored the canons of the critic, and wrote because he had something to say, and must say it, it was Byron. Let him then be witness. With his wild passions boiling within him, all he cared to do was to give utterance to his strong feelings, in language as strong and vivid as themselves. And he succeeded. No man's works reflect more faithfully than his, their writer's true character, or express with greater power, the bitterness, the hatred, the scorn, which flamed up incessantly and inexhaustibly from the volcano of that impetuous heart. And what was the language which came ready to his pen, when he wielded it to defy the world ? Why, the simple Saxon phrase of our unconquered forefathers. When, before he closes *Childe Harold*, his voice "breaks forth" to "pile on human heads the mountain of his curse," what says he—and how ?—"That curse shall be forgiveness," &c. (See Childe Harold, Canto iv., Stanzas cxxxv., cxxxvi.) So, too, the description of the night before Waterloo, at Brussels ; the Apostrophe to the Ocean, in the same poem ; the opening lines in the *Corsair ;* the Shipwreck, in *Don Juan*— "Then rose from sea to sky the wild farewell ;" and, last of all, that wonderful passage in the *Giaour*,

wherein the aspect of "Greece, but living Greece no more," is compared to the appearance of the dead upon the day of dissolution—

> The first dark day of nothingness;
> The last of danger and distress;
> Before Decay's effacing fingers
> Have swept the lines where Beauty lingers.

Time fails to refer to Scott or Southey, to Shelley, or the poets of our own day. I will just, however, allude to one striking fact. The shorter poems, which are the most popular things of the kind in our language, and by which their authors have attained to the widest celebrity and most enduring fame, are those in which the old Saxon diction has been employed. Of this class are Gray's Elegy; Wolfe's Ode on the Burial of Sir John Moore; Campbell's Hohenlinden; Hood's Song of the Shirt; Tennyson's May Queen; together with some of the more popular pieces in Longfellow, and in Moore's Irish Melodies, and those exquisite descriptions in Goldsmith's Deserted Village, which every schoolboy, in every subsequent generation, has known off by heart. Burns, too, wrote in a language which was oral: not a written language at all: a dialect of that Anglo-Saxon tongue which is common to ourselves, and to our fellow-countrymen in the vast colonial dependencies of the empire, as well as to that sister nation across the Atlantic, where, as I have been informed on good authority, next to the Bible, the most popular, and familiar, and best read book in the country, is the poetry of Robert Burns.

Having thus gone through the works of the greatest English poets, from the Elizabethan era downwards, I submit that I have proved my case—that the Saxon element in our language is the most fitting dress of poetic thought,* and that it has been so employed to embody the noblest concep-

* And this, after all, is but the local application of a general principle. Mr. J. T. Danson, one of the Vice-Presidents of the Society, who occupied the Chair when the present paper was read, threw out this, among other valuable suggestions and remarks, and pointed out, that what is here claimed for what I have called the Anglo-Saxon portion of our language, is probably "possessed, in an equal degree, by the most commonly used part of every other language, when used with ability in addressing those to whom it is native." It is evident that the argument in the paper derives great force from this fact; and that the subject acquires new interest when it is seen that a general principle is illustrated by what was intended to have only a local application. I will put the question thus:— 1. The primitive oral language of every people, as it embraces the widest range of associations, is the language of that people's poetry. 2. The Anglo-Saxon is the primitive oral language of the English people; and therefore, 3. The Anglo-Saxon is the appropriate diction of English poetry. Nor have I, in that over-zealous advocacy, which some may think they recognise, claimed more for our primitive Saxon tongue than has been claimed for it by others, whose eminence as writers, and weight as literary authorities, will be recognised when I quote Mr. Macauley:—"The style of Bunyan," says that

tions, by those among our countrymen, whom all delight to honour. And the practical conclusion to be drawn from such an enquiry as the present is this—that whoever aims at poetic excellence, must study attentively the primitive language of this country, must learn to estimate its richness, to appreciate its beauty, and strive to make it the vehicle of communicating his thoughts to those whom he would address. It will more completely and clearly convey his own meaning; it will permit a fuller measure of justice to the nature of his conceptions, and obtain for them a readier comprehension and appreciation from the reader. Surely these are advantages not to be slighted. Those who have laboured to possess them, have been rewarded by the veneration of posterity; while those who have affected to despise, or neglected to cultivate, our simple but earnest Saxon phraseology, though they have, in some instances, achieved a "bubble reputation" in their lives, have been contemptuously doomed to the indifference of later times. Such has been their ultimate gain, after having chosen to adopt a gaudy and "inane phraseology," which has passed current under the name of poetic diction. That spell, however, has been broken. Many of our best modern writers, following Wordsworth's illustrious example, have aimed at, and apparently succeeded in, establishing the principle, that such words as the influence of classical studies have now naturalised into our language, may be legitimately employed, if used discreetly and appropriately, always subject to the laws of rhythm, and subordinate to the more copious use of those primitive words which form the great bulk of our vocabulary, and to which we mainly owe it that our noble English tongue is so rich, so flexible, so expressive, and so musical,

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brilliant writer, "is delightful to every reader; and invaluable as a study to every person who wishes to obtain a wide command over the English language. The vocabulary is the vocabulary of the common people. There is not an expression, if we except a few technical terms of Theology, which would puzzle the rudest peasant. We have observed several pages which do not contain a single word of more than two syllables. Yet no writer has said more exactly what he meant to say. For magnificence, for pathos, for vehement exhortation, for subtle disquisition, for every purpose of the poet, the orator, and the divine, this homely dialect, the dialect of plain working men, was perfectly sufficient. There is no book in our literature, on which we would so readily stake the fame of our old unpolluted English language; no book that shews so well how rich that language is in its own proper wealth, and how little it has been improved by all that it has borrowed." (*Essays*, vol. i.) And that which is here said of Bunyan, might be applied with almost equal force to Defoe. Indeed, it would be possible to carry the argument much further than I have done, and to maintain upon very strong grounds, that not only the most popular *poems*, but the most popular *books*, in our language, are those in which the primitive speech of the people has been used by a master hand.

as the authors now quoted have, in their undying works, demonstrated it to be. Any broad impassable line of separation between the two elements in our language which have now been dwelt upon, I fear too tediously, is as impracticable as it would be absurd. To interweave the one with the other; to give to poetic thought its best expression in the fittest words; scouting equally the affectation of a mawkish simplicity, or the assumption of a pompous volubility—this is the most worthy of the poet's honoured name, and of his noble vocation; as it is the most likely to make his calling honoured, and to establish his own fame upon a real and permanent foundation. But simplicity is a different thing from common-place; and doggrel is not poetry. The poet must treat of objects, not as they are (begging pardon of the Pre-Raphaelites), but as they seem to be. And poetic effect depends not exclusively upon the nature of his subject, but also upon a writer's treatment of it—at least to the same extent that artistic effect depends upon the painter. He finds the best point of view; depicts the scene before him with due regard to the finest effect of light and shade, and expressive grouping; and so he produces an admirable picture. Yet over the very same scenes the "ploughman plods his weary way" daily, but is as indifferent to their beauties as if they had no existence, or as if he were the inhabitant of another planet. And as with the artist's, so with the poet's eye. In the "primrose by the river's brim," and in "the meanest flower that blows," he sees something more than the outward shape, and visible colouring. While for these he has a more intense and loving admiration than another, his fancy invests them with new life and loveliness, "finds tongues" in their speechless beauty, surrounds them with touching images or kindling associations of magnificence and grace; and so by the matchless magic of the poet's pen, he wings their tender messages or thrilling appeals to every heart, which has kindred sympathies with his own.

ON THE FOUNDATION AND HISTORY OF BOTELER'S FREE GRAMMAR SCHOOL AT WARRINGTON.

By John Fitchett Marsh, Esq.

(Read 7th February, 1856.)

After one of our meetings, at which mention had incidentally been made of the Grammar School established at Warrington in 1526, I was requested to make it the subject of a paper; and I promised to put into such a form as might be suitable for a page of our transactions some notes which I have from time to time collected, on the names of the various persons whom I have been able to trace as having filled the office of schoolmaster. It afterwards appeared to me that an account of the foundation deed and a sketch of the history of the school might not be without interest, not only with reference to the particular institution, as a subject of local history, peculiarly within the province of this society, but as illustrative of the state of manners and opinion at that remarkable era in our literary and religious history, of which the foundation of grammar schools was a striking characteristic.

A large proportion of these schools owed their foundation to charters from King Edward VI. and Queen Elizabeth, granting to them the endowments of chauntries, suppressed under the statute 1 Edward VI. c. 14, which, after reciting that "a great part of superstitions and errors in Christian religion hath been brought into the minds and estimations of men, by reason of their ignorance of their very true and perfect salvation through the death of Jesus Christ, and by devizing and fantazying vain opinions of purgatory and masses satisfactory, to be done for them which be departed, the which doctrine and vain opinion by nothing more is maintained and upholden than by the abuse of trentals, chauntries, and other provisions made for the continuance of the said blindness and ignorance, and further considering that the alteration, change, and amendment of the same, and converting to good and godly uses, as in *erecting of grammar schools to the education of youth in virtue and godliness*, and the further augmenting the universities, and better provision for the poor and needy, cannot in this present parliament be provided and conveniently done," authorises the

seizure to the king's use of all lands and possessions for the maintenance of chauntry priests, and the payment into the exchequer of rent-charges appropriated to superstitious uses. But the endowment of schools for the cultivation of classical learning had a prior and independent origin. For some years before the altered relations of the Defender of the Faith with the Court of Rome led to the dissolution of the monasteries, the monastic system had been tottering to its fall: and the exposure of its corruption had prepared the public mind for a measure so violent, that even Henry would not have ventured on it, if he had not felt confident that his designs were seconded by the national will. In the meantime, the revival of classical learning on the continent, and the general enfranchisement of the human mind, which accompanied the agitation of the questions raised by the early reformers, awakened many, even among those who had seen no reason to abandon their allegiance to the Romish church, to the necessity for providing those means for the advancement of learning which the monasteries had ceased to afford. Thus about the year 1515, we find Richard Fox, Bishop of Lincoln, whose foundation of Corpus Christi College at Oxford was originally intended for a monastic establishment, diverted from his purpose by the remonstrance of Hugh Oldham, Bishop of Exeter (himself the founder of the Manchester Grammar School in 1510) urging him to provide for the increase of learning rather than "build houses and provide livelihoods for a company of bussing monks, whose end and fall they themselves might live to see." (*Holinshed's Chronicle*, iii. 617, ed. 1808.) In the same spirit colleges and schools were about this time founded in considerable numbers by royal and individual liberality. Of those which are referred to the former source it is perhaps unnecessary to enquire how many are really indebted to royal munificence, and how many owe nothing to the monarchs whose names they bear, beyond the trouble of affixing the sign manual to the warrant for issuing a charter.

Our Warrington Grammar School owes neither lands nor charter to royal favor; but is indebted for its foundation to the pious bounty of Sir Thomas Boteler of Bewsey, one of the heroes of Flodden, whose knightly family, as lords of Warrington from a period very shortly after the conquest, have been more than once mentioned in the transactions of this society. By his will, dated 16th August, 12 Henry VIII. (1520), after reciting that he had "delyvit by indenture tripartede into the custody and kepyng of the righte revende Father in God John Abbotte of Whalley fyve hundrethe markes

in golde savely to be kepte to his use and to be disposede at his pleasure," declares that "it is his full will and mynde that his executors should have the disposicon and orderyng of the said sume of fyve hundrethe markes to purchase and obteyne lands tēnts or rentes to the yerely value of ten pounds above all charges or as myche thereof as should be unprovidett and purchasede by him and therewith to found a fre gram scole in Weryngton to endure for ev and to susteyne and beire the charges of the same and the residue of the saide fyve hundreth markes whiche should remayne aft the said land p,chasede and all costes and charges consnyng the said fundacon of the saide gram scole made & hade he willed that his executors should have the disposicon thereof to dispose for his soule and his wyffe's soule and for the maynetnnce of that his p'sente testamente And it was his will that his executors duryng theire sevall lyves and aft theire decease that his heires from tyme to tyme should denoiate name and appoynte an honeste preste groundely lernede in gram to be maist of the said scole whiche should say masse pray and do dyvine s'vice at the poche churche of Weryngton for the soule of him the saide Sir Thomas Dame Margarette his wyffe his auncetors and his heires after theire deceases and that all statuts and ordinnces concernyng the fundacon of the saide scole should be made and stablysshede by him and his said executors."

Sir Thomas set about the good work in his life time; for by a codicil, dated 27th February, 13 Henry VIII. (1522), after reciting that "his trusty srvnts S^r^ Will^m^ Plutre and Rauf Alyn at his costs and charges to his use & to the p'fomace of his last will had p'chased certen mesis lands and tents in Tyldesley and Weryngton," he willed "that the said feoffees should stand seasyd of all the said mesis lands & tents w^t^ all their apptnnce to thuse of the fundacon of the free gram scole as is compset in his said will and the same mesis lands and tents to be made sure to the same use by thadvise of his executors and their councell lerned."

He died on the 27th April, 1522; and his pious intentions were carried into effect by an indenture dated the 16th April, 1526, to which date I have accordingly referred the foundation of the school. The deed is made between Thomas Boteler, Esquire, son and heir of Sir Thomas Boteler, of the first part, Dame Margret Boteler, late wife of y^e^ s^d^ Sir Thom, Ranulph Pole Clerke, Rich^d^ Sneyde Esq., & Will^m^ Plumtre Chapleyn, Executors* of

*A few words on the names of the executors may not be out of place. Dame Margaret, the testator's widow, was the daughter of John Delves, of Doddington, and is

the testament and last will of y^e^ s^d^ S^r^ Tho. Boteler of the second part, Sir Richard Bolde K^t^ and 15 other knights, esquires, & gentlemen, four of whom had married daughters of the testator, the intended trustees (or feoffees as they were then styled) of the third part, and S^ir^* Richard Taylor, clerk, named deputed & ordained schoolm^r^ of A new Free School made & ordained

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said to have subsequently married Richard Butler, of Rawcliffe. Ranulph Pole is described in the attestation to the will as Parson of Hawardyn. Richard Sneyd, was recorder of Chester, and four times chosen member of Parliament for that city. In 19 Henry VIII. he purchased from John Cheney the manor of Wistaston, which has descended to the Sneyds of Bradwell and Keele, in the county of Stafford. (See *Orm. Chesh.* iii. 256.) Sir Thomas Boteler, who by his will confirms a fee or annual rent of twenty shillynge by the yere to his trusty frende Richard Sneyde for his counsel to him given, appears to have selected him with a view to his professional knowledge, as one of the executors, which office he also filled to Thomas, second Earl of Derby, who died 24th May, 13 Henry VIII. (See *Seacombe's House of Stanley*, p. 43.) The name of William Plumtre occurs in various documents of the period. Sir Thomas, by his will, directs certain feoffees, in whom he had already vested the advowson of the parish church of Warrington for that purpose, to "p̄sente to be p̄sone of the said churche when it shall happe to be next void my well-beloved chapleyne Sir William Plumtre preste for the gode love zele and favor that I beire to the said Sir William and to thentente that he shall daily pray for me;" and makes a pecuniary provision for him until he should be promoted to some benefice of the yearly value of £20 or above. Notwithstanding the testator charges his son and heir, Thomas Boteler, upon his blessing, to suffer the said Sir William peaceably to be presented and inducted into the said church, it does not seem that the arrangement was ever carried into effect; for it appears from Randle Holme's notes on Warrington Church, printed in *Baines*, from the Harl. MSS., that Richard Delves, parson of the Church, died 22nd November, 1527, and on the 27th September, 35 Henry VIII. (1544), we find Sir William Plumtre in possession of the church of the dissolved Augustine Priory of Warrington, under a lease from the great monastic grantee, Thomas Holcroft, (see *Beamont's Warrington in* 1465, p. xlvi.,) while in the 34 Henry VIII., as I shall have to notice presently, the rectory of Warrington was held by Edward Keble, and an arrangement made which rendered it, for 200 years, of very little value to his successor.

* The use of "Sir," as a clerical title, even down to the time of Shakespeare, is as familiar to the reader of early poetry as to the legal antiquary, who meets with the title so often in formal documents like the present, that he cannot share the evident surprise of Tyrwhitt, in his Glossary to Chaucer, "that it has crept *even* into Acts of Parliament." The precise import of the title has not, however, been much considered. Sir Walter Scott, speaking of the usage in Scotland at the end of the fourteenth century, observes that "all the priests of the period, who were called from that circumstance the Pope's knights, received the honorable title of *Dominus*, contracted into *Dom* or *Dan*, or translated into *Sir*, the title of reverence due to the secular chivalry." (*Fair Maid of Perth*, ch. xx.) Archdeacon Nares, in his *Glossary*, also speaks of it as a title "applied to priests and curates in general," explaining that *Dominus*, the academical title of a bachelor of arts, was usually rendered by *Sir* in English at the Universities, so that a bachelor, who in the books stood '*Dominus Brown*,' was in conversation called '*Sir Brown*.'" He adds, that this was in use in some colleges even in his memory, but not, as in the instances found in Chaucer and Shakespeare, prefixed to the Christian name. Fuller observes that "such priests as have the addition of *Sir* before their Christian name were men not graduated in the university, being in *orders* but not in *degrees*, whilst others, entitled *masters*, had commenced in the *arts:* and generally founders of chauntries preferred priests not beneficed to those places, as best at leisure constantly to attend the same." (*Church History*, b. vi. p. 352.) [Since the foregoing was written, the subject has been discussed in *Notes and Queries*.]

by those presents at Warrington in y^e^ county of Lanc. of y^e^ fourth part. It commences with a recital that "y^e^ afores^d^ S^r^ Thomas Boteler k^t^ Right virtuously calling to his good remembrance y^t^ in y^e^ s^d^ county & shire of Lanc. be very few schools of Gram^r^ Whereby mens sons might learn gram^r^ to y^e^ Intent y^t^ they thereby might y^e^ better learn to know Allmighty G^d^ & to serve him according to y^r^ Duties by Virtue wherof they might y^e^ better avoid and eschew all vices & use good man^rs^ thinking also inwardly in his hearte that throw y^e^ Grace & Goodnes of All^ty^ G^d^ many poor child^r^n & yong men applying themselvs to learn gram^r^ w^ch^ is y^e^ originall ground and fountayn out of y^e^ w^ch^ doth proceed & spring y^e^ very mean & plain way to come to y^e^ clear und^r^standing of Good liveing might approach to such knolege of y^e^ light of grace y^t^ pchance they might happen to be y^e^ very clear lanthorn of Good Example in Vertuous living to all y^e^ country thereabouts to y^e^ good encrease and use of vertue and expulsion of all vices fully intended & purposed to have stablished founded and made A free Gram^r^ school in Warrington afors^d^ if it had pleased All^ty^ G^d^ to have sufferd him to have livd in y^s^ transitorry life few years longer than he did Wherefore & for as much as it pleased All^ty^ G^d^ to take him to his infinite mercy before y^e^ establishm^t^ & Foundat^n^ of y^e^ same Gram^r^ school yet y^e^ s^d^ S^r^ Thomas Boteler by his last will and testam^t^ declared and willed y^t^ y^e^ s^d^ Gram^r^ School sh^d^ be after his Death founded and made for ever to endure Wherefore as well y^e^ s^d^ Thomas Boteler son and Heir of y^e^ s^d^ S^r^ Thomas & y^e^ s^d^ executors of y^e^ Testam^t^ of y^e^ s^d^ S^r^ Thomas as y^e^ s^d^ S^r^ Rich^d^ Bold and other his co-feoffies afores^d^ consid^r^ng y^e^ Blessed mind and Good Purpose of y^e^ s^d^ S^r^ Thom. in y^e^ Premises as is before declared and intending y^e^ perfect execution of y^e^ s^d^ laste will of y^e^ s^d^ S^r^ Thom^s^ and the Accomplishm^t^ of y^e^ same have ordeynd establisht and made & by these Presents done ordeyn establish and make A free Gram^r^ school to be kept and holden for ever in Warrington afores^d^ and also divers convenient ordenances and estatutes concerning y^e^ same as hereafter done ensue."

I will not trouble you with that portion of the deed which relates to the appointment of trustees, the vesting in them of the trust estates, and the provisions for future management, as it is not only comparatively uninteresting, but is accessible in the reports of the Charity Commissioners. It may therefore suffice to say that by the deed under notice, and a deed therein referred to of even date, a house in Warrington, set in a lane there called Baglane, and a croft adjoining, are set apart for the use of the school-

master, to be called the School House of Warrington; and lands in Lancashire and Cheshire, including those specifically mentioned in the codicil, are vested in the feoffees to the use of the schoolmaster. Provisions are also made for the appointment of new trustees, and for granting leases of the lands to the schoolmaster for terms of 60 years determinable with his life; and it is provided that "whensoever y^e^ s^d^ Sir Rich^d^ Taylor now made schoolm^r^ by these presents or any other schoolm^r^ there shall happen to decease or to be amoved from y^e^ mastership or rowme of schoolm^r^ of the s^d^ Free School for any cause hereafter declared that then y^e^ s^d^ Dame Margret Ranulph Rich^d^ & W^m^ Plumtre and y^e^ overliv^g^ of y^m^ shall name and appoint anoth^r^ honest and discreet Priest sufficiently and groundedly learned in gram^r^ & able to teach gram^r^ to be schoolm^r^ of y^e^ s^d^ school for Term of his life & after y^e^ Decease of y^e^ same Dame Margret Ranulph Pole Rich^d^ Sneyde and W^m^ Plumtre that then Thom^s^ Boteler son & heir of y^e^ s^d^ S^r^ Thom^s^ Boteler & his Heirs of his body begotten And for default of Heirs of his Body then his right Heirs from time to time whensoever y^e^ s^d^ school shall happen to fall void of a schoolm^r^ by Death or oth^r^wise shall name appoint & put in another honest & Discreet Priest groundedly seen & learnd in gram^r^ & able to teach gram^r^ to be schoolm^r^ of y^e^ s^d^ Free school And if it happen y^e^ s^d^ Thom^s^ Boteler or his Heirs of his Body & for lack of Heirs of his Body his right Heirs within A month next after y^e^ Advoidance of y^e^ s^d^ schoolm^r^ to be neglig^t^ & remiss & do not name appoint & put in another schoolm^r^ when & as often as y^e^ s^d^ Free school shall fall void as is before declar'd that then y^e^ Parson of Warrington afores^d^ for y^e^ time being and his Success^rs^ Parsons of Warrington afores^d^ shall have for that time only y^e^ nomination & putting in of A new schoolm^r^ of y^e^ s^d^ Gram^r^ School as often as y^e^ same Free School shall fall void as is afores^d^ & in case y^e^ s^d^ Parson or any his success^rs^ Parsons of Warrington afores^d^ shall happen to be negligent & remiss & do not name nor put in an able Honest and Discreet Priest as is afores^d^ to be schoolm^r^ of the s^d^ Free School by y^e^ space of anoth^r^ month then next following that then the Warden of y^e^ Colledg of Manchest^r^ & his success^rs^ for y^e^ time being shall name & appoint A schoolm^r^ of y^e^ s^d^ Free School in like form as y^e^ s^d^ Parson should have done & in likewise in y^e^ time of y^e^ Vacation of y^e^ s^d^ Parsonage y^e^ s^d^ Warden and his success^rs^ shall have y^e^ nomination & appointm^t^ of y^e^ s^d^ schoolm^r^ for that time only as often as y^e^ same school shall fall void y^e^ s^d^ Parsonage then being void of a Parson." It is further provided "y^t^ y^e^ s^d^ schoolm^r^ shall have A seal made & known for y^e^ schoolm^rs^

Seal of Warrington wth y^{e} wch Seal he shall do and seal all writings y^{t} to him shall appertain in any thing concerning y^{e} s^{d} school or any thing thereto belonging & y same Seal to be surely kept and deliv^{r}d from one schoolm^{r} to another as they shall succeed in y^{r} Rowmes and y^{t} all deeds scripts indentures evidences & muniments concerning y^{e} s^{d} lands &c. shall be layd put & deliv^{r}d by y^{e} s^{d} schoolm^{r} by indenture Bipartited into y^{e} s^{d} College of Manchester & there to be surely kept and copies thereof to be made & deliv^{r}d to y^{e} s^{d} schoolm^{r} & to remain wth him & wth any other schoolm^{r} there & if any of y^{e} s^{d} lands or tenem^{ts} hereafter happen to be in variance or suit in y^{e} Law then y^{e} Warden of y^{e} s^{d} Colledge or his success^{r} for y^{e} defence thereof shall deliver to y^{e} s^{d} schoolm^{r} all such deeds as concerneth y^{e} same lands then being in variance only if need so shall require & after the Determination or appeasing of y^{e} same variance then y^{e} same schoolm^{r} within one month next after shall redeliver all y^{e} same evidence into y^{e} s^{d} College again." Unfortunately all these precautions have been insufficient for their object. Either from the multiplicity of variances and suits in the law, or from other causes, the deeds are no longer to be found in the College of Manchester; and my extracts are taken from ancient copies, which have been admitted as evidence in the Courts. The schoolmaster no longer boasts his official seal; and it is to be feared no impression of it will ever gladden the eyes of Warrington antiquaries.

But the portion of the foundation deed, to which I wish particularly to direct your attention, is that containing "the Statutes and Ordinances of y^{e} s^{d} Free School," and which, so far as they are desirable for our purpose, are as follows :—

"First it is ordeynd y^{t} y^{e} said schoolm^{r} shall teach any scholar coming to y^{e} s^{d} school after Wittington's Gram^{r}* & making or after such Form & such

* Fuller notices that "King Henry endeavoured an uniformity of grammar all over his dominions, that so youths, though changing their schoolmasters, might keep their learning. This was performed, and William Lilie's grammar enjoyned universally to be used. A stipend of four pounds a year was allowed the king's printer for printing of it, and it was penall for any publicly to teach any other. Bishop Buckeridge examining a free school in his diocese of Rochester, the scholars were utterly ignorant of Lilie's rules, as used to others, whereat the Bishop exclaimed, 'What! are there puritans also in grammar?'" (*Church History*, b. v. p. 168.) I find no Act of Parliament bearing on the subject, and know not in what form the royal injunction appeared. It was probably after the date of our foundation deed; for though Lilie's "*Brevissima Institutio seu ratio grammatices cognoscendæ*," appeared as early as 1513, his "*Short Introduction of Grammar* GENERALLY TO BE USED" was first printed by Reynold Wolfe, the king's printer, in 1549. This edition is in the Bodleian, but is extremely rare, not being noticed by either Ames, Dibdin, or Lowndes. The 79th canon of 1603 (confirm-

Gramar wch shall be most used to be taught hereafter in Free Gram^{r} schools & y^{e} same to be taught freely & quietly without taking any Reward Stipend or Schole-hire or any other thing by Promise grant or coven^{t} before made any* Feriall day except three Feriall days next before y^{e} Feasts of y^{e} Nativity of our L^{d} G^{d} Easter and Pentecost and other three Feriall days next after y^{e} said Feasts except y^{e} s^{d} schoolmaster shall happen to have any reasonable let or impediment Provided alwais y^{t} it shall be lawfull to y^{e} schoolm^{r} & any other schoolm^{r} for y^{e} time being to take of any Scholar of y^{e} s^{d} school learning gram^{r} four penys by year y^{t} is to say in y^{e} Quarter next after X^{t}mas A Cock peney & in any of y^{e} three other Quart^{rs} in y^{e} year one Potation† Peny & for y^{e} same Potation Penys y^{t} y^{e} s^{d} schoolm^{r} for y^{e} time

ing the injunctions of Edward VI. and Queen Elizabeth, and the canons of 1571) directs that all schoolmasters "shall teach the grammar set forth by king Henry VIII, and continued in the times of Edward VI. and Queen Elizabeth, of noble memory, and none other." (*Gibs. Cod.* 1145.) It is not very clear which of the numerous grammatical works of Robert Whittinton, printed by Wynkin de Worde and Pynson, from 1513 to 1522, is referred to in our foundation deed as Wittington's grammar; but at this period he must have been at the height of his reputation. He is mentioned by Warton (*History of English Poetry*, ii. 130) as being the last person, (though some later instances are mentioned in Churton's lives of Smith and Sutton,) on whom was conferred the Oxford degree in rhetoric, which included versification and grammar, and which eventually led to the title of Poet Laureate. Anthony Wood says he was "the most famous grammarian of his time, and had his head crowned, or his temples adorned, with laurel; at which time, and the time also when that degree was completed, it was allowed to him by the venerable regents that he might wear a hood lined with silk, but not to be used for the future by any body else." (*Fasti Oxon.* vi. 19.) The judgment of his contemporaries was not ratified by posterity. Roger Ascham speaks with contempt of "such beggarly gatherings as Horman, Whittington, and other like vulgars for making of Latin" (*Schoolmaster*, p. 277, edition 1815); and says that "a child will learn of the better of them that which another day, if he be wise and come to judgment, he must be fain to unlearn again." (Id. p. 196.) Fuller compares Whittinton and Lilly to "a verb *defective* and one *perfect* in all the requisites thereof;" though in another place he quaintly admits that "some since have discovered *blasted leaves* in our Lilly."

* Unless the word *any* is here used in the sense of *every*, as it appears to be elsewhere, the sentence is incomplete, and possibly requires the word *notwithstanding* to be supplied. If the former be the correct reading, the word *ferial* is used in the sense of weekday. It was occasionally so used, as in a charter of 1448 quoted in Cowel's *Interpreter* (s. v. Feria), stipulating for the celebration of mass, "per tres dies feriales in capella ellemosinariæ nostræ, et per alios tres dies feriales in capella S. Marie, diebus vero dominicis ubicunque voluerit." The ferial litany is subsequently spoken of in this sense. The word, however, generally implied a festival day of some sort, whence our *fairs*, which in early times were usually held on the wake or festival of the saint to whom the church was dedicated. Perhaps the word had a meaning answering to our modern holiday, rather than to the ancient holy-day, being used, in analogy to the Roman *Feriæ*, to denote those days on which either law, custom, or religion sanctioned a cessation from labour; and a subsequent clause in the deed may have been intended to restrain the too frequent practice of making ferial days an excuse for the interruption of school duties, and to confine the indulgence to the more important festivals or holy days of the church.

† Both of these payments were sanctioned by almost universal custom, but are expressly prohibited in the statutes of the Manchester Grammar School, together with

being shall make A Drinking for all y^e^ s^d^ Scholars in any of y^e^ s^d^ three Quart^rs^ in y^e^ year."

"Also y^t^ y^e^ s^d^ schoolm^r^ shall give no licence to any scholar of y^e^ s^d^ school to play in any feriall day if in y^e^ week of y^e^ s^d^ feriall days shall happen to fall one Holy day & if it be A whole week without any Holy day that then y^e^ afores^d^ schoolm^r^ for y^e^ time being shall give Licence to y^e^ s^d^ Scholars to play on y^e^ thursday at afternoon only except it be at y^e^ Request or Desire of A great Worshipf^ll^ man."

"Item it is ordeynd by y^e^ s^d^ Parties y^t^ y^e^ s^d^ schoolm^r^ for y^e^ time being & any other Priest Schoolm^r^ of y^e^ s^d^ School being within Warrington Parish afores^d^ any Sunday and Holy day shall be personally in y^e^ Quire of y^e^ Parish Church of Warrington afores^d^ in his Surplice to help to sing read & say y^e^ Divine Service according to his Learning & coning Except he have a Reasonable Excuse or Impediment."

"Also it is ordeynd y^t^ all y^e^ schollars of y^e^ s^d^ Free School being present thrice in y^e^ week y^t^ is to say Sunday Wednesday & Friday shall go two & two togeth^rs^ in Processions about or within y^e^ s^d^ Church of Warrington Singing y^e^ Feriall Litany in y^e^ Feriall day & on y^e^ Sunday or other Holy days then singing y^e^ Respondes * or such Service as to that Day then shall appertain & according to y^e^ Coning of y^e^ s^d^ Scholars in Song."

"Also if y^e^ s^d^ schoolm^r^ for y^e^ time being or any other schoolm^r^ of y^e^ s^d^ Free-School be proved afore y^e^ Officiall of Chester by four Honest Persons of Warrington y^t^ he is not Dilig^t^ in attending or teaching y^e^ s^d^ Scholars or else be not honest in his living by Incontinency or Viciousnes or else if he be not Discreet in Correction of y^e^ s^d^ scholars that then if y^e^ s^d^ schoolm^r^ do not amend after three monitions to him thereof to be given by him y^t^

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the Victor Penny—these, with a number of similar perquisites, having become in many instances an excuse for extortion. To modern ideas the barbarous custom of cock-throwing at Shrovetide is scarcely less reconcileable with scholastic discipline than the Drinking prescribed by our foundation deed; but may not the latter have had its origin in a quasi religious observance connected with the founder's anniversary, and traceable to the Jewish funeral feasts? Fuller speaks of a general expense out of lands wherewith every chantry was endowed "for an anniversary potation, founded, as it seems, on Job's words, Job iv., as Bellarmine citeth the chapter without verse:—Panem tuum et vinum tuum super sepulturam justi constitue—put thy bread and thy wine upon the sepulture of the just man—but no such words appear in the place alleged, though some such like are found in the fourth of Tobit, ver. 17." (*Church Hist.* b. vi. p. 352.) In the Book of Ecclesiasticus, ch. xxx. v. 18, we read "Delicates poured upon a mouth shut up are as messes of meat set upon a grave."

* "Responds" were short anthems sung after reading three or four verses of a chapter, after which the chapter proceeded. (*Gibs. Cod.* 298.)

namd & appointed y^e^ same schoolm^r^ if he then be on live & if he be dead then by him y^t^ shall have y^e^ nomination & putting in of y^e^ s^d^ Schoolm^r^ that then y^e^ same person to whom y^e^ next nomination shall belong shall amove the same Schoolm^r^ & provide name & put in another sufficient & able Priest to be Schoolm^r^ of y^e^ s^d^ Free-school for Term of his Life as is Afores^d^."

"Also it is further ordeynd y^t^ he y^e^ s^d^ Schoolm^r^ for y^e^ Time being shall appoint every day one of his scholars learning Gram^r^ of y^e^ two highest Forms in y^e^ school one after another as y^e^ s^d^ scholars shall sitte in order to teach all infants y^t^ shall come to y^e^ s^d^ school to learn y^r^ A. B. C. & Primars & so forth till they be entred into y^e^ Learning of Gram^r^."

"It is also ordeynd y^t^ as well y^e^ s^d^ schoolm^r^ as y^e^ s^d^ scholars of y^e^ s^d^ school inhabited w^thin^ y^e^ Franchises of Warrington afores^d^ between Michaelmas & Easter shall be at y^e^ Parish Church of Warrington betwixt six & seven of y^e^ clock in y^e^ morning & there shall say such Prayers as shall be lymyted & written on A table to be hanged in Boteler's Chappell within y^e^ s^d^ Church then imediately after y^t^ they shall go to y^e^ s^d^ School-house & shall depart thence at five of y^e^ clock in y^e^ Afternoon or by four at y^e^ Discretion of y^e^ s^d^ schoolm^r^ & between Easter and Michaelmas y^e^ same m^r^ and scholars shall be at y^e^ s^d^ Church between five & six of y^e^ clock in y^e^ morning & there shall say y^e^ s^d^ prayers & then imediately from thence shall depart & go to y^e^ s^d^ school & every night after they shall depart from y^e^ s^d^ school y^e^ s^d^ M^r^ & Scholars shall resort to y^e^ s^d^ Church and there shall sing an Antiphone of our Lady and say such Prayers as shall be expressed in y^e^ s^d^ Table & then depart home."

"Also it is ordeynd y^t^ if any of the s^d^ schoolm^rs^ for y^e^ time being shall happen to be sick or diseased so y^t^ he shall not be able to teach y^e^ s^d^ scholars that then he shall cause another sufficient & able Priest to supply his Room during his s^d^ sickness & Disease & shall pay to him such wages as they shall agree upon."

"It is also ordeynd y^t^ no scholar shall wear any Dagger Hangar or other Weapon invasive other than his knife to cut his meat with & y^t^ any scholar shall be obedient to y^e^ s^d^ schoolm^r^ for y^e^ time being in all his comdments & Demands lawfull & shall be ready to give his help & Assistance to y^e^ Correction of ev^r^y scholar of y^e^ s^d^ Free School when & as often as y^e^ s^d^ Schoolmaster for y^e^ time being shall comand them."

"Also it is ordeynd y^t^ ev^r^y scholar after he be twelve months in Gram^r^

shall use to speak to another at all times & in every Place latin & no English & y^{t} no scholar shall use Diceing or Carding nor any other unlawfull games upon pain of Correction at y^{e} Discretion of y^{e} s^{d} schoolm^{r}."

"Also it is ordeyned y^{t} if any scholar do disobey y^{e} s^{d} schoolm^{r} in his Reasonable Comandm^{t} or Correction or make any Fray upon him that then y^{e} s^{d} scholar to be amoved from y^{e} s^{d} school for ever Except y^{e} s^{d} schoolm^{r} be contented to keep him still."

"Also it is ordeynd & agreed betwixt y^{e} s^{d} Parties y^{t} one Aniversary shall be kept within y^{e} s^{d} Church of Warrington at y^{e} Costs of every of y^{e} said Schoolm^{r} for y^{e} time being y^{e} seven & twenty day of Aprill ev^{r}y year for y^{e} souls of y^{e} s^{d} S^{r} Thom^{s} & his Ancestors & his Heirs & for y^{e} soul of Dame Margret Boteler after her Decease in maner & form hereafter ensuing y^{t} is to wit y^{t} y^{e} Parson or y^{e} Curat of y^{e} s^{d} Parish Church wth seven other priests w^{ch} shall be eight in number & ten singing Clerks or schol^{rs} in y^{e} evening before y^{e} s^{d} 27th day shall together sing Placebo & Dirige & in y^{e} morning of y^{e} s^{d} 27th day y^{e} s^{d} eight Priests & ten clerks shall say y^{e} Comendations & after y^{t} at y^{r} Pleasure three of y^{e} s^{d} Priests to say masse of The Trentall of S^{t} Gregory* wth y^{e} Collect Deus simul spes nostra & iiij of y^{e} other Priests to say mass of y^{e} Aniversary & y^{e} Parson Curate or another Priest to keep mass of Requiem solemnly wth note & y^{e} other Seven Priests & ten Clerks to help to sing in y^{e} same masse & y^{e} Priest y^{t} keepeth y^{e} s^{d} masse of Requiem to have vij pence & every of y^{e} other 7 Priests to have viij^{d} for y^{r} Business & every of y^{e} s^{d} ten clerks to have ij^{d}."

"And furthermore it is ordeynd y^{t} y^{e} Bellman of Warrington wth y^{e} Bell in y^{e} s^{d} xxvj day of Aprill at afternoon shall go throu y^{e} town of Warrington & according to y^{e} custom therof desire ev^{r}y man woman & child to pray for y^{e} Souls of y^{e} s^{d} S^{r} Thomas & Dame Margret after her Decease & his Heirs & y^{t} done then y^{e} clerk of y^{e} Church of Warrington to cause three long peals to be rungen wth all y^{e} Bells in y^{e} steeple except y^{e} Sanctus Bell & so on y^{e} s^{d} 27 day as according for an Aniversary & y^{e} same Clerk to have for y^{e} Ringing xx^{d} & y^{e} Bellman to have ij^{d}."

* "Placebo" and "Dirige" are parts of the office for the dead in the Sarum Manual. An office for the dead, under the title of "The Dirige," is retained in Henry VIII.'s Primer. Under the title of "The Commendations," the Primer prints the 119th Psalm, describing it as "the A B C of Godly love, the paradise of lernyng, the shoppe of the holy Gost, the schole of truth." "Mass of the Trentall of St. Gregory" is supposed by a high authority on ritual subjects to refer to a special mass in honour of St. Gregory, in the Sarum Missal, on the 30th day after his festival. Sir Thomas Boteler's will directs "four Trentalls of St. Gregory to be said for his soule at London, at Scala Cœli, by four severall priests."

"Also it is furthermore ordeynd y^t ev^ry of y^e s^d $schoolm^{rs}$ w^{th} y^e Advice of y^e Chantre Priest there shall give & Deal an Alms y^e s^d 27^{th} day to fourety poor Folkes $xiij^s$ $iiij^d$ that is to wit ev^ry of them $iiij^d$."

"Also it is ordeynd that there shall be * * * upon y^e Herse* to be made upon & over y^e grave of y^e s^d S^r Thomas viij Syrges† during y^e singing of y^e Dirige and mass afores^d * * *"

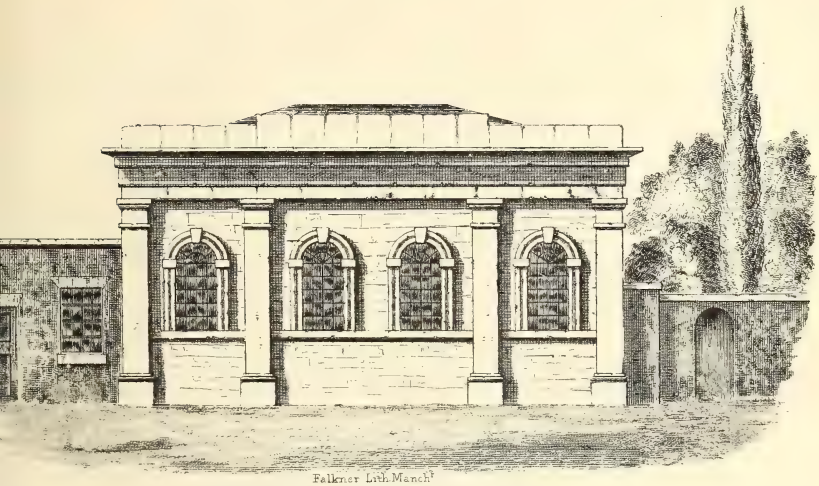
"And furthermore every of y^e s^d $schoolm^{rs}$ & y^e other Chantre Priest before y^e feast of Pasche yearly next ensuing shall say or cause to be s^d yearly as many other masses to fulfill y^e s^d Trentall y^t is to witt 27 Masses w^{th} y^e Placebo & Dirige to make and fulfill A whole Trentall * * * And after y^e s^d Aniversary * * * Quarter of y^e year to say five masses of y^e five wounds of our L^d for y^e soul of y^e s^d S^r Thomas and Dame Margret after her Decease w^{th} such collects as they shall think convenient."

"Also it is ordeynd & agreed betwixt y^e s^d Parties y^t y^e s^d $Schoolm^r$ for y^e time being once in ev^ry year at y^e day of y^e s^d Anniversary shall make A true Account of all such Issues & Profits coming & growing of y^e s^d Lands $Tenem^{ts}$ & Rents as he shall then have rec^d that year before * * * y^e

* The will of Sir Thomas Boteler directs his body "to be buriede, if it please God, in the poche church of Weryngton before the ymage of oure Lady in Boteler's Chapell, in the buriele of his ancestors, nere his father;" and he willed "that a stone or convenyente tomb, with scripture graven thereupon, should be laid upon him, by the discretion of his executors." The "herse," or tomb, erected accordingly, is described among the other monuments noticed by Randle Holme, who says:—"In the sayd chapell, on a faire marble stone, at the west end of the tombe, in brass, is tow figures, a man standing in armore, with Butler's cote on; and on his wiues cote is Delves cote; the 4 Evangelests in brass in the 4 corners, and written about—'Pray for the soules of Tho. Butler, kt., and Dame Margaret, his wife, which had one sonne and 8 daughters, vilzt. Thomas married Cicely, dau. to Peirs Leigh, Margaret to Rich. Bould kt., Ellen to Jo. Bagott, Eliz. to Geo. Booth, Isabell to Randle Brereton, Anne to Geo. Atherton, Cicely to Henry Kighley, Margery to Tho. Southworth, and Dorothy:' Sir Thomas dyed 27 Aprell, 1522." The only traces of the tomb, which have survived the various alterations in the chapel, are some fragments of brasses, preserved in the Warrington Museum and Library, and shown in our page of illustrations, one of the coats being that of Boteler, and the other Boteler impaling Delves. The third figure is probably the symbol of St. Matthew, being one of "the 4 evangelists in brass in the 4 corners" noticed by Randle Holme. The popular notion that the beautiful alabaster tomb, which adorns the Boteler chapel, is that of the founder of the Grammar School, though confirmed by the statements of Pennant and Baines, is disproved not only by the armour and costumes, but by historical evidence; the researches of Mr. Beamont, printed in the transactions of the Chester Architectural, Archæological, and Historic Society, having shown, from a manuscript of Sampson Erdswick in the Harleian collection, describing the arms formerly sculptured on the monument, that it was erected to the memory of Sir John Boteler, the father of Sir Thomas. The blanks in this and several subsequent clauses of the foundation deed are found in the earliest copies, and represent dark colored interlineations, which were undecypherable when the copies were made.

† Serges were the great wax candles burnt before the altar.

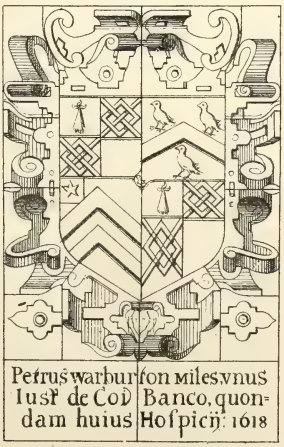
Boteler's Free Grammar School at Warrington.



Falkner Lith. Manch.r

New School Erected in 1829

Brasses from the Founder's Tomb.



Arms of Sir Peter Warburton, from a Window in Staple Inn Hall.

Parson or Curate of Warrington & before y^e^ other Chantre Priest singing in Boteler's Chappell afores^d^ & if y^e^ schoolm^r^ upon y^e^ s^d^ Account made shall be found to have rec^d^ more money than y^e^ sume of tēne Pounds * for his Stipend for y^t^ year & y^e^ costs of y^e^ Anīv^r^sary as is before expressd & named that then all y^e^ overplus therof & y^e^ same more money over y^e^ s^d^ ten pounds & y^e^ costs of y^e^ s^d^ Anīversary * * * shall be put into A Coffer having three locks upon it & y^e^ same money to be kept to beire y^e^ costs & charges of y^e^ Renuing of y^e^ s^d^ Feoffment & writing of y^e^ Deeds Schedules & Indentures concerning y^e^ same school & for y^e^ Defence of y^e^ Title of y^e^ Premisses & for y^e^ Ornam^ts^ of y^e^ s^d^ Chappel if need shall so require."

There is no trace of any interference with Sir Thomas Boteler's Foundation under the statute 14 Edw. VI., for the suppression of Chauntries and Trentalls. Probably the appropriation, which (looking at the words of the preamble as to the purposes to which the endowments were intended to be applied) would have been the result of any proceedings thereunder, was effected by the simpler process of neglecting the superstitious observances enjoined by the Foundation Deed. Perhaps the patrons claimed a share of the booty. At all events, we find that by the end of the sixteenth century they had contrived, to a considerable extent, to defeat the benevolent designs of Sir Thomas Boteler. His great-grandson, Edward Butler, died about the year 1586, the last male descendant of his family, having previously sold the Bewsey estates and the manor and advowson of Warrington, which by means of various assurances became vested in Thomas Ireland of Bewsey, whose family, in the 17th century, becoming extinct in the male line, was united by marriage with that of the Irelands of the Hutt and Hale, the ancestors of Mr. Ireland Blackburne. On the death of Edward Butler, the representation of his family devolved upon

* A stipend of £10, after making every allowance for the change in the value of money, seems a slender provision for "an honest and discreet priest groundedly seen and learned in grammar, and able to teach grammar;" but it is not to be attributed to any want of liberality in the views of the founder, for it is worthy of observation that precisely the same stipend was provided in some of the most celebrated foundations in the kingdom, namely that of William of Wykeham, at Winchester, Henry VI., at Eton, William of Wainflete, at Oxford (in connection with Magdalen College), and Hugh Oldham, at Manchester. It must therefore be regarded as an evidence of the low pecuniary value at which the age estimated the services of the learned, of which there is additional proof in the present deed, which provides a fee of 8d. for each of the priests "for their business" at the anniversary, and for each of the singing clerks 2d., being precisely the same remuneration to be given to the bellman for proclaiming the anniversary, while the clerk is to have 20d. for ringing the bells.

his two sisters and co-heiresses, Elizabeth, the wife of Sir Peter Warburton, one of the Justices of the Common Pleas, and Margaret, the wife of John Mainwaring. The latter had, under various pretexts, possessed himself of nearly all the School lands, partly under a grant from Queen Elizabeth, as concealed lands, partly under a lease from Sir Thomas Gerard, the last surviving feoffee, and partly, it would seem, by collusion with the Master. In the year 1602, Sir Peter Warburton, then Sergeant at Law, took upon himself to vindicate the Charity, and filed a Bill in the Duchy Court to compel the appointment of new trustees. The suit abated by the deaths of Lady Warburton and Sir Thomas Gerard; but fresh proceedings were instituted, and eventually the Court ordered "that Thomas Tildisley, Esquire, of councill with the said complainant, and Thomas Ireland, Esquire, of councill with the said defendant, and Sir John Broograve, Knight, Attorney General of this Court, umpier, should mediate some end betwixt the said parties, for the good of the said school;" and an award having been made accordingly, it was confirmed by decree on the 20th June, 1607, which provides that "the said John Manwaring, and Margaret, his wife, during the life of the said Margaret, and after the decease of the said Margaret, the said Thomas Ireland, being the owner of the Manor* of Warrington, where the said school is founded, his heirs and assigns shall have the nomination and appointment of the said schoolmaster, being an able man fit for that place, in consideration whereof, the said Thomas Ireland shall pay and bestow to and for the repairs of the said school the sum of £10, and to the said John Manwaring £20," and directions are given for the execution by all necessary parties of conveyances to new trustees, and for the future leasing and management of the trust estates, without the intervention of the master, "who shall attend his charge and have noe dealing with the setting and letting of the said lands, or imploying of the said stock or otherwise, save only with his rent and pension, and the use of the said stock, and the schoolmaster's house or chamber, with the crofts, &c., in Warrington, which order or forme of leasing is thought fit, notwithstanding the same be not expressed in the first foundation, because the late deceased schoolmaster there, having a lease from the feoffees, did assigne

* The patronage of the school did not accompany the manor of Warrington, in its transmission from the Irelands to the Booths, and from them to the Blackburnes; but seems to have been invariably exercised by the patrons of the parish church, the advowson of which has always belonged to the owners of the Bewsey estates, and is at present vested in Lord Lilford.

the same to the heir of the founder, contrary to the true intent of the foundation." The new feoffments were accordingly executed in the year 1608; and in 1610 a commission of charitable uses was issued, under which certain orders and decrees were made on the 11th September in that year, confirming the feoffments, and making provision, in accordance with the decree of the Duchy Court, for the management of the estates and the appointment of schoolmasters: and it is provided that the schoolmaster "shall by all the tyme that he shall be scholemaster of the said schole, well and truely keep the said schole, and teach and instruct the scholars thereof freely, without takeing or agreeing to have any reward, stipend, or schole-hyre, or any other thing, for teaching any scholar of the said schole, other than the stipend to be paid by the said feoffees or governors, and upon every schole day shall be and continue in the said schole three hours att the least in the forenoon, and three hours att the least in the afternoon, teachinge, hearinge, and examininge his schollers, if his health will permit, and shall every morning, together with his scholers, use some forme of prayer meet for the purpose, giveing thanks to God that stirred upp the hart of the founder, Sir Thomas Butler, Knight, to soe good a work, and likewise at night before they depart." The decree of the commissioners was duly confirmed; and thus the estates were restored to the foundation by the perseverance and public spirit of Sir Peter Warburton, who further testified his good will to the school by granting to it a rent-charge of £5 per annum, issuing out of a messuage in Chester. It is still received by the trustees; and though the altered value of money makes his gift of smaller pecuniary importance than he intended, it has entitled him to the gratitude of the inhabitants of Warrington, in testimony of which one of our public spirited antiquaries has deposited in our Museum a copy of Sir Peter's arms, from a window in the hall of Staple Inn, of which he was a Bencher. A drawing of the arms forms one of our illustrations.

The new system of management does not seem to have been much more successful than the old; for within about half a century we find the income of the school in danger of being almost wholly lost, in consequence of claims set up by the tenants to have their leases renewed at the almost nominal rents they were then paying. Active measures were taken, and the principal part of the tenants were brought to submit to take leases at rack rent in 1677. It will, however, be convenient to defer any notice of

the subsequent events affecting the history of the school, until I come to speak of the respective masters, of whom I am fortunately able, from various sources, to make out a tolerably complete list.

Sir Richard Taylor, the master appointed by the foundation deed, as little disturbed by the storms in the political and religious atmosphere as his contemporary, Symon Symonds, the veritable vicar of Bray (for I suppose it is settled that the vicar of "good king Charles's golden days" is a myth), appears to have retained his mastership during the reigns of Henry VIII., Edward VI., Mary, and Elizabeth; for he is last heard of on the 20th December, 1569, when he renewed a lease for ten years of part of the school estates in Wigan. I am not aware of any other mention of him, unless (as suggested by my friend, Mr. Beamont, to whom I am indebted for information and references on various points not specifically acknowledged) he be the person referred to in the Inquisitio post mortem of Sir Thomas Boteler, 4 July, 14 Hen. VIII., which finds that he was seized (inter alia) "De homagio et servitio Rici le Tailor."

John Wakefield probably succeeded him; for we find him as early as the 29th September, 1576, joining with the trustees in an assurance of the same lands: He took, under the will of Edward Butler, the great grandson of the founder, dated November 2, 1586, a legacy of £40, and was nominated one of his executors, but did not prove the will. He died in the year 1605, and was buried at Warrington on the 30th May in that year.

The entry in the parish register, on the 9th March in the same year (viz., 1605–6), of the baptism of a daughter of "Robert Martin, ludi magister," is perhaps too slight evidence of the person referred to having been master of Boteler's Free Grammar School; and in the year 1608 we find the name of Ottiwell Rynse, described as schoolmaster, attached to the feoffment above referred to, as a witness to the livery of seizin.

I know of no other mention of him; nor have I met with the name of any other master between him and Nathan Ashworth, whose name frequently occurs in the register of the baptism of his children. The earliest of these entries which describes him as "ludi magister" is that of a son, baptized on the 21st April, 1627; but there is an entry, in which his name occurs without that addition, on the 30th April, 1623, which may have been previous to his appointment, especially as the fact of his

having been a native of Warrington is rendered not improbable from a John Ashworth having been rector there from 1589 to 1607. The submission of the tenants to take leases at rack rent is attributed, in some memoranda on the school affairs, in the handwriting of Mr. Owen, one of the later masters, to the exertions of his predecessor, Samuel Shaw; but the date of the submissions, which are still in existence, shews that this was a mistake, and that the proceedings must have been commenced during the mastership of Ashworth; and as the trustees do not seem at this period to have interfered much with the charity, it was probably owing to his exertions, in a great measure, that the endowment was preserved. He was buried at Warrington, on the 13th February, 1672–3. He must have been the schoolmaster referred to, but not mentioned by name, in the *Life of Adam Martindale*, p. 176.

The name of John Wright occurs on the 14th August, 1677, occupying (as that of the master of the Grammar School usually did) the next place to the rector, in the minutes of the proceedings at a parish meeting. He was buried at the parish church on the 3rd September, 1679. It was during his mastership that the proceedings against the tenants were brought to a successful issue.

The name of "J. Clayton, sch. m^{r} de Warrington," occurs at parish meetings on the 22nd June, 1680, and 5th June, 1681; and the parish register records the burial, on the 10th November, 1686, of "Mr. Joseph Willott, scholemaster of the Free Scoole," but I have met with no other mention of either of them.

Samuel Shaw succeeded to the mastership in 1687, having previously held a similar office at Wigan. The Diary of bishop Cartwright, published by the Camden Society, mentions that on his way to take possession of his bishopric, and of the rectory of Wigan, which about this period was frequently held in commendam with it, he was met at the latter place by the mayor and aldermen and a number of gentlemen, and saluted with an elegant speech in Latin, and as well delivered, by Mr. Shaw, the schoolmaster. Under the subsequent date of 28th January, 1687, he states that he gave Mr. Samuel Shaw, of Wigan, a licence to teach the Free School of Warrington. The favorable impression made on the bishop by the latin speech seems to have been a permanent one, as the diary contains frequent memoranda of the interchange of hospitalities between the prelate and the

master of the grammar school of Warrington. He considerably improved the master's house, and left a memorial of the fact in the shape of a stone tablet, still existing over the doorway, with the inscription "1688, Samuel Shaw, A.M." He obtained the consent of the trustees to the commencement of proceedings, at his own risk, for the recovery of some lands which were apparently lost to the charity, and which, after many years of litigation, were restored to the school. In 1690–1, he was presented to the rectory of Warrington, which was in the gift of the Atherton family. It was at this period of very little pecuniary value, an improvident lease for 200 years having been granted of the tithes, in the 34th year of Henry VIII., reserving a rent of £20, and the lessees covenanting with Edward Keble, the then rector, to find him and his successors a sufficient priest, to officiate in all sacramentals and services belonging to the church. The lease became part of the possessions of the owners of the Bewsey estates, who allowed the rector (as he was still called, notwithstanding the impropriation) to receive the small tithes, in lieu of having a priest found him according to the terms of the lease. We are informed by Mr. Canon Raines, in a note to *Gastrell's Notitia Cestriensis*, (ii, 233,) that Mr. Shaw held the office of King's preacher, being one of the four preachers sharing a royal stipend of £200, first established by Queen Elizabeth, and afterwards regulated by James I, "out of zeal to God's glory, and care of the souls of many thousands of his majesty's subjects within the county of Lancaster, there being great want of maintenance for preachers in most places of that shire," and appointed to preach among the impropriations there, according to the appointment of the bishop. In a letter to Bishop Stratford, in 1693, Mr. Shaw states that he, and others for him, had preached above forty sermons during the previous half year. His principal charge, as king's preacher, was Hollinfare, a chapelry within the parish of Warrington, where he preached two sermons per month, until a regular curate was found, in the person of the Rev. John Collier, the father of our Lancashire worthy, Tim Bobbin. Mr. Shaw continued to hold the office of master of the grammar school until his death, in the year 1718. He was buried at Warrington on the 30th September.

The Rev. John Tatlock was next nominated to the mastership, but the Bishop refused to license him. An extract from the correspondence of Bishop Gastrell, among the *Lanc. MSS.*, for which I am indebted to the kindness of Mr. Canon Raines, furnishes the grounds for the refusal. In

Boteler's Free Grammar School at Warrington.

The Master's House

a letter dated from Christ Church, Oxford, 5th Nov., 1718, and addressed to his secretary at Chester, the Bishop writes:—"Mr. Tatlock holds the place for Mr. Hayward, till he is in orders, but I hope wthout Bond. If upon examination w^{n} he applies for a Licence you find he has given Bond, let him have none, and plead my generall order to you for your refusall. I have enclosed the nomination." The refusal of a licence on such grounds must be regarded as somewhat of a stretch of episcopal authority, for even if it had been as settled law then as it is now, that the appointment of masters of Grammar Schools is matter of ecclesiastical cognizance, there could have been no pretence for treating such an appointment as a *benefice*, so as to render a bond of resignation simoniacal; and I can imagine no other ground for the Bishop's objection. It was however submitted to. Mr. Tatlock resigned the appointment, and on the 22nd March, 1719–20, a nomination was made of the Rev. Thomas Hayward, M.A., of Brazenose College, Oxford, reciting the former nomination, the Bishop's refusal of a licence, and the resignation of Mr. Tatlock; and Mr. Hayward was duly licensed accordingly. He was born on the 5th February, 1695–6, a native of Warrington, and the son of Thomas Hayward, an attorney there. He was twice married, and had issue no less than 16 children. In an obituary notice of one of them (Francis Hayward, M.D., who died at Bath in the year 1831, at the advanced age of 92, and was the father-in-law of the Rev. Joseph Hunter, the learned assistant keeper of the records) it is stated that the Rev. Thomas Hayward was instituted to the vicarage of Garstang, on the 4th March, 1722, and resigned it in 1731, and about that time removed to Warrington. There is unquestionably an error in the date of the latter event, as I have procured my information direct from the original documents in the Episcopal registry at Chester. As early as the 31st March, 1719, we find Hayward's signature, with the addition of "ludi m^{r}," occurring next to that of the rector, in the proceedings of a parish meeting; and there is a receipt, signed by him and Anne Shaw, for rents due to the master in November, 1718, lodged, apparently by accident, with the documents at Chester. It may be inferred from these facts that, even during Tatlock's nominal mastership, Mr. Hayward was performing the duties and in receipt of the emoluments of the office. There can be no doubt, however, that his presentation to the vicarage of Garstang was subsequent to his appointment to the Grammar School; and accordingly, in a note to *Dr. Parkinson's "Old Church Clock,"* containing extracts from the diary of

the Rev. Thomas Parkinson, curate of Garstang, in which it appears that Mr. Hayward officiated there at Easter, 1723 and 1724, it is stated that he was non-resident. In 1728, the Chapel of Sankey, near Warrington, which had up to that time been used as a Presbyterian place of worship, was rebuilt, and placed under Episcopal government, (*Notitia Cest.* ii, 215,) and Mr. Hayward became incumbent, which probably led him to resign his living at Garstang; but he continued to fill the office of master of the Grammar School. The obituary notice above mentioned, quotes the biographer of Dr. Percival, who was one of Mr. Hayward's pupils, for Mr. Hayward's character as "an able but severe master, an admirable scholar, and a very useful man." He is mentioned also in the *Remains of John Byrom*, (i, 315) who addresses a sportive invitation in verse to him and Mr. Haddon, the rector of Warrington. The error in the note to the passage referred to, naming 1731 as the date of his death, is attributable to Baines. Mr. Hayward died in 1757, and was buried at Warrington on the 2nd September.

The Rev. James Ansdell, of Bunwell, Norfolk, was nominated to succeed him, and presented to the bishop, if not actually licensed; but he subsequently wrote to the bishop, that in consequence of the augmentation of his salary he had determined to continue his residence there; and he accordingly resigned the appointment, and on the 4th November, 1757, the Rev. Edward Owen, M.A., then usher of Great Crosby School, as stated in a memorandum endorsed on his appointment, in the Episcopal registry, was nominated in his stead. He states, in some memoranda to which I have had access, that he found the school in a dilapidated condition, the building in ruins, the roof ready to fall in, and the floors and walls all clay. He at once put it into a state of thorough repair, converting some outbuildings into a dining room and bedrooms, and rendering the house fit for the reception of boarders, which, he states, it never was before. Mr Owen was a scholar, whose attainments were eminently calculated to extend the reputation of the school; and it seems accordingly to have been in a flourishing condition during the early years of his mastership. Among his scholars, who in after life attained a position of eminence, the name of the Rt. Hon. George Tierney deserves to be particularized. Mr. Owen's translation of Juvenal and Persius, published in two vols. 12mo. in 1785, when he must have attained the ripe age of 57, or thereabouts, has given him a permanent place in classical literature, though it has not maintained

its ground against the spirited translation of Gifford. He also published in 1770 a Latin Grammar, under the title of "The Common Accidence improved." From the preface to a new edition, published in 1800, it appears to have been adopted in various schools, where "the masters felt themselves under no restraint from local statutes, or the ascendancy of custom or fashion." In the year 1767, the rectory of Warrington, now improved in value by the falling in of the lease granted in the reign of Henry VIII., became vacant by the death of the Rev. William Farington; and the patron, Mr. Gwyllim, presented Mr. Owen to the living, in testimony of respect for his attainments. He continued to reside at the school-house, the rectory being in a somewhat dilapidated condition, and retained his mastership until his death. His personal and literary merits are attested by Gilbert Wakefield, whose praises can scarcely be suspected of proceeding from a too partial source, and who, while doing justice to the "propriety, perspicuity, and elegance of his style," speaks of him as "a man of most elegant learning, unimpeachable veracity, and peculiar benevolence of heart." It must be confessed, that during the latter years of his mastership, his increasing years, infirmity, and deafness incapacitated him in a great measure for the duties of his office; and the school seems at this period to have lost much of its usefulness. He appears, from his will, which mentions several relatives in Montgomeryshire, to have been connected, both by family and property, with that county. He died in the year 1807, at the age of 79, and was interred, according to the directions of his will, "in the chancel of the church of Warrington, on the south side of the grave of Samuel Shaw, a very worthy predecessor of his, and the place of his interment marked with a small square marble, inscribed only with his name and title, age, and time of decease." A portrait, which persons still living, who remember him, pronounce an admirable likeness, is in the possession of Miss Lee, of Grappenhall.

The Rev. Robert Atherton Rawstorne was appointed to succeed him as master; and having within a few months afterwards been presented to the rectory, he appointed the Rev. William Bordman, as his usher, to whom he left the entire management of the school, and allowed him the use of the school-house, thus converting the mastership into a sinecure, and exciting the resistance of the inhabitants of Warrington, who had seen with regret the gradual decay of the school, and had only been deterred from taking active measures by the consideration that the course of nature must

shortly terminate the mastership of Mr. Owen. In 1810, an information was filed in the Court of Chancery, at the instance of several influential inhabitants, in order to test the right of Lord Lilford to the patronage of the school, and to procure a declaration of the court that the office of master was incompatible with that of rector of the parish. In the first of these objects the promoters of the suit failed; but the court, in 1814, pronounced a decree, declaring the incompatibility of the offices, and that Mr. Rawstorne, by accepting the living, had vacated the mastership.

The Rev. William Bordman, M.A., who, as usher to Mr. Rawstorne, had practically been the master of the school since 1808, was thereupon formally appointed master in 1815. He had previously been second master to Dr. Valpy, at Reading, and was a person of no mean attainments; but the circumstances under which he commenced his mastership were not conducive to his popularity, and he acquired, whether justly or unjustly, the reputation of being one of those "Ajaces flagelliferi," whose race is fast disappearing under the humanizing influence of public opinion at the present day. Repeated complaints against him came under the notice of the trustees, and eventually an arrangement was proposed in 1827, and carried into effect in the following year, by which, in consideration of a round sum of £400, and a pension of £150 per annum, to be deducted from the income of his successor, he resigned his mastership. He was living, a few years ago, at Honfleur.

In the meantime, the Chancery suit had resulted in the establishment, in the year 1820, of a scheme for the future management of the school, providing for such an extension of the plan of education as was consistent with the primary object of the foundation, as "a school for teaching grammatically the learned languages;" and a brighter prospect opened. I have no means of tracing the circumstances which led to the appointment of any of the masters previous to Mr. Rawstorne; but it is satisfactory to find evidence that at all events his three immediate predecessors, whose masterships extended over 120 years, were all men of attainments well qualifying them for the office. On Mr. Rawstorne's appointment the mastership seems to have been treated as a mere appendage to the rectory; and when this arrangement was defeated, the appointment, as his successor, of the gentleman whom he had selected to perform the duties of the office as his deputy, followed almost by accident. On the resignation of Mr. Bordman, the patron proceeded to an appointment in the manner best

calculated to promote the interests of the school, and selected, as the most eligible candidate for the office, the Rev. Thomas Vere Bayne, of Jesus College, Oxford, and, I believe, a native of that city. He was born on the 25th of October, 1803. Under his mastership the school speedily recovered the popularity which it had lost under his predecessor, and its increased efficiency was manifested in the imperative necessity for accommodation for an increased number of scholars. In the year 1829, with the sanction of the Court of Chancery, a fund, which in the course of the litigation had been paid into court, was expended in the erection of a school, capable of accommodating 120 boys. It is a plain stone building, with little pretension to architectural effect, and forms one of our illustrations. While I avow the partiality of an attached pupil, owing to Mr. Bayne the most valuable portion of my education, I may be excused from discussing his merits; but few will deny him the character of an accomplished classical scholar. He resigned his mastership in the year 1842, to accept the incumbency of St. John's Church, Broughton, and died on the 22nd of December, 1848.

His successor was the Rev. Henry Bostock, M.A., of Wadham College, Oxford, formerly master of the Grammar School at Aylesbury, which he left to accept his present appointment. He was selected, like his predecessor, from a number of candidates, solely with reference to his scholastic attainments. The success which has attended his pupils is the best evidence of his abilities as a teacher. The small population of Warrington cannot be expected to furnish many scholars to proceed to the Universities, and it is therefore gratifying to notice that of those who have done so during Mr. Bostock's mastership, five have obtained scholarships and prizes at Oxford and Cambridge—a sixth has attained to distinguished honours, both in classics and mathematics, at the University of Durham—and a seventh, after obtaining a scholarship and mathematical prize at Cambridge, has within the last month taken a Wrangler's degree.

With such evidence, I need say nothing of the present condition of the school; and it only remains for me to mention, by way of bringing down its history to the present time, that in 1840, the sale, on what appeared very advantageous terms, of a portion of the school estates, afforded an opportunity of obtaining, at the purchaser's expense, an act for regulating the future management of the school; and the education which it at present affords is one alike consistent with the views of the founder and with the

requirements of modern times. Though it does not profess to give a commercial education, in the sense entertained by those who will not recognize the utility of any knowledge which is not available for the immediate purposes of the counting-house, the instruction afforded is by no means confined to Greek and Latin; but while opportunities are afforded for the study of modern languages, the ordinary course of study embraces even the higher branches of mathematics, and, in fact, such an education as qualifies its scholars to take their places in the world as educated men, or to compete at the Universities, as we have seen they can do, with pupils from the most celebrated of our educational foundations. I am well aware that popular feeling is by no means unanimous in regarding an education such as that afforded at Boteler's Free Grammar School as the most desirable to be adopted in a manufacturing town; but I entertain a strong opinion that, in keeping up a certain amount of classical knowledge, the Grammar Schools of this kingdom are rendering a service to the country, which would not be effected by institutions partaking of a more commercial character. Such schools as the opponents of classical learning would wish to see established in their place would at best only be rivals of private establishments, at which the instruction intended for those who seek no higher degree of mental cultivation than will fit them for the pursuits of retail trade is in every town procurable, at a cost, the saving of which was not the object of the founders of our Grammar Schools; while, on the other hand, an education fitted to qualify a youth for one of the learned professions, or for an honorable career at the Universities, would, but for institutions like Boteler's Free Grammar School at Warrington, be almost inaccessible to any but the sons of the wealthy.

THE ANCIENT GEOMETRICAL ANALYSIS, ILLUSTRATED FROM THE WRITINGS OF THE LANCASHIRE GEOMETERS.

By T. T. Wilkinson, F.R.A.S., &c., &c.

(Read 15th May, 1856.)

The cultivation of the Ancient Geometrical Analysis appears to have been a favourite subject with the mathematicians of the sixteenth and seventeenth centuries. During the former period, Commandine completed his translation of the *Mathematical Collections of Pappus*, which he enriched with numerous additions of his own; Vieta published a Restoration of *Apollonius on Tangencies;* and our own countryman, Dr. Dee, prefixed his celebrated preface to what is usually known as Billingsley's *Euclid.* The latter period is more particularly distinguished for the many attempts to restore the lost treatises of the Greek geometers, and to exemplify the true nature of their methods of discussing geometrical propositions. Amongst those who succeeded best in these respects, we may instance Ghetaldus, who reproduced the *Inclinations*, and furnished a supplement to Vieta on the *Tangencies;* Snellius, who wrote on the *Determinate Section* and the *Sections of Ratio and of Space;* Schooten and Fermat, who either wholly or partially considered the *Plane Loci* and the *Porisms.* Besides these, we may enumerate the names of Sir Henry Saville, Anderson, Gregory St. Vincent, Pascal, Desargues, Girard, Hugo D'Omerique, Huyghens, and more latterly, Halley, Simson, and Stewart; all of whom contributed by their writings and example to revive a taste for the study of those forms of pure geometry, which had lain dormant for more than a thousand years after the Saracens destroyed the library at Alexandria.

It must not, however, be concluded from the presence of several English names of good repute in the preceding enumeration, that the study of the ancient geometry was then pursued so sedulously and so successfully in this country as on the continent. The names of Halley, Simson, and Stewart, belong to the eighteenth century rather than to an earlier date. They formed, too, almost isolated instances in their respective generations, and

the state of geometrical science even at the Universities of Cambridge and Oxford may be judged of from the fact that Sir Isaac Newton always blamed himself for having studied the works of Des Cartes, and other algebraical writers, at the commencement of his mathematical studies, before he had paid due attention to the *Elements of Euclid.*

It was not until after the publication of Thomas Simpson's *Algebra* and *Geometry*, which contained a large collection of geometrical problems constructed and demonstrated, that the taste for pure geometry began to diffuse itself amongst our mathematicians generally. His *Select Exercises* laid down the principles of the ancient geometrical analysis in a manner intelligible to the majority of students; and the publication of geometrical questions in the *Lady's* and *Gentleman's Diaries*, and other similar works, paved the way for that complete development of the system which took place after the Rev. John Lawson had rendered the attempted restorations of the works of Apollonius, and a sketch of the Porisms of Euclid, accessible to non-academic readers. The works of Halley, Simson, and Stewart, from the circumstance of their being written in Latin, were sealed books to the great bulk of those whose names appear in the periodical scientific literature of the day, and had it not been for the aids just noticed, most probably the complaint made by Dr. Simson in 1767, that "the taste for the ancient geometry, or indeed any geometry, seems to be quite worn out," would have been every whit as just half a century later, as it was during the period in which his Latin treatise on the *Loci Plani* "did not sell."

At the very time, however, that Dr. Simson was thus despairing of his favourite science, a band of men was rapidly forming in the north and south of England, whose lives were to be consecrated to the study of pure geometry; and although the sound of their fame had not then penetrated the seclusion of his Alma Mater, the labors of themselves and their pupils were destined ultimately to change the whole face of mathematical science, and even to induce a return to more logical systems in the leading educational institutions of the country. The *Lady's Diary*, the *Mathematician*, the *Mathematical Exercises*, and the *British Oracle*, conducted by Simpson, Rollinson, Turner, and Lawson, laid the foundations of the reform during the lifetime of the Glasgow professor; and after his decease, the *Gentleman's Diary*, the *Mathematical Repository*, the *Mathematical Companion*,

and numerous minor serials, under the direction of Wildbore, Leybourn, Hutton, Hampshire, Davis, and others, continued to foster the study and develop the powers of such proficients in our own county as Butterworth, Wolfenden, Smith, Hilton, Cunliffe, Bazley, Campbell, Simpson, Kay, Holt, and Swale.

The Greek geometers are well known to have divided their course of study into what they termed the *first* and *second* elements. The former they subdivided into two parts, corresponding respectively to our elementary principles, and the practical measurement of plane figures; the latter contained the whole of those ingenious speculations of Euclid, Apollonius, and others, which find their counterpart in the higher geometry of the Continental mathematicians. According to Pappus, they were accustomed to employ two methods for the demonstration or discovery of geometrical truths. The first process was termed Analysis, or the resolution into parts; the second received the name of Synthesis, since it consisted principally of the art of composition. By analysis is meant that process of reasoning by which we proceed, step by step, from the entities sought, as taken for granted, until we arrive at one or more simple truths already known; whence we conclude that the entities supposed to be given, or true, at the outset are really so, and the steps by which we arrived at the simple known truths are generally such as to indicate the construction and demonstration of the proposition, or, at all events, to point out its impossibility under the given conditions. Synthesis, on the contrary, commences by advancing some known truth, or truths, respecting the proposition proposed, and it proceeds, step by step, to the theorem required to be demonstrated, or to the problem to be constructed. Analysis, in fact, searches the given—Synthesis gives the sought; whilst both may be regarded as general types of the *re*gressive and *pro*gressive forms of logical deduction.

When applied to purely geometrical enquiries, the two methods differ only in their point of departure, for the reverse of one process always reproduces the other. In the application of the analytical process to the demonstration of theorems, or to the construction of problems, we first of all suppose the theorem to be true, or the problem to be actually constructed. We then proceed to examine such consequences as may result from these admissions, by calling in the aid of any other properties of the requisite diagrams which may be already known. Should these consequences prove

to be false, the process constitutes a *reductio ad absurdum*, which proves that the supposed theorem is not true, or that the construction of the proposed problem is impossible from the given data; but if none of these happen to be known truths, or possible operations, we must examine other consequences in connection with other properties of the diagrams, until we arrive at a result which is already known to be true, or a construction which is admitted to be possible. When such is the case, the analysis properly ends, since it is obviously unnecessary to trace every thing back to the *elements* or to the *data* of Euclid, and nothing more remains for the student to do than to deduce his construction and add the synthesis or demonstration, by reversing the steps of the analysis.

From what precedes, it is evident that the analytical process is most properly applied to the solution of problems, whilst synthesis adapts itself more particularly to the demonstration of theorems. The former is professedly the instrument of research and a means of invention, by which new truths are discovered; the latter adds to our knowledge by demonstrating the truth of those relations which have presented themselves, either accidentally, or from necessity, during the process of resolution. It is impossible to lay down any general rules, by which all geometrical analyses may be conducted. The nature of the inquiry, and the relations which exist amongst the data, exercise an influence which must not be neglected in the selection of the course to be pursued. In particular cases, lines must be drawn in certain directions, of given lengths, or having given ratios; angles must be formed at given points, of given magnitudes; circles must be described with given radii, from given centres; the intersections of certain loci are sometimes either to be obtained or conceived; tangents must be drawn from given points to given circles; and many other contrivances which daily present themselves to the geometer must occasionally be taken advantage of, before the demonstration of a theorem or the construction of a problem can be obtained; and it is in a ready selection of the best means, and in the judicious disposal of such preliminary constructions and arrangements, that the superiority of an adept renders itself manifest. There is a *taste* and an *elegance* to be found in geometrical processes quite as marked in character as the *sublime* and the *beautiful* in poetry or prose; and the gifted geometer is as easily distinguished by his writings as the talented author of a novel, a history, or a poem; for although the inspirations of genius may manifest themselves in

totally opposite directions, they are as clearly discernible in the walks of abstract science as they are in the more widely appreciated pursuits of literature.

The complete resolution of any proposition by means of the ancient geometrical analysis, generally consists of *six* distinct parts, although in some particular cases, one or more of these may be conveniently omitted. We have—

Firstly—the hypothesis and preparatory construction.

Secondly—the examination of the relations existing amongst the data and quæsita of the proposition.

Thirdly—the construction or final solution.

Fourthly—the demonstration.

Fifthly—the discussion of particular cases, and the determination of the limits within which the problem is possible.

Sixthly—the corollaries deducible from the whole of the process.

The hypothesis and preliminary construction are obviously essential to every geometrical proposition; but the former may be deficient or redundant, according as the data are too few, or too many, or not sufficiently limited to enable the geometer to attain the object proposed; whilst the latter may consist merely of the most simple operations. In all cases where the analysis and construction are given, the synthesis or demonstration may be, and generally is, omitted; and, on the other hand, the analysis is not often required where the construction and demonstration are given at length. The ancient geometers, however, appear to have been very careful to furnish all the parts of a solution in consecutive order, nor did they rest satisfied until they had thoroughly examined all the special cases of the subject of inquiry. The moderns do not often imitate them in this respect, but content themselves, in most instances, with giving the solution of a general case, and leaving the particulars to be elicited by the student. The Greek geometers were accustomed to proceed from the *particular* to the *general* by a series of easy gradations; we usually attack the general proposition at once, and deduce the particulars from the results.

As an illustration of the application of analysis and synthesis to the investigation of the truth of a theorem, we may select the nineteenth proposition of Dr. Matthew Stewart's *Propositiones Geometricæ*. Its solu-

tion offers little difficulty, nor does it require much preliminary construction, but it is not the less valuable as an example, since it presents a perfect specimen of the entire agreement of both processes when taken in *direct* and *reverse* order.

THEOREM.

If from any point C in the diameter of a circle AB produced, a tangent be drawn to the circle; and if from the point of contact D a perpendicular DE be demitted upon the diameter; then will AC : CB : : AE : EB.

ANALYSIS.

Suppose the theorem true, and let ADB *(fig.* 1) be the circle, F its centre, AB its diameter, C the point in the diameter produced, D the point of contact, and DE the perpendicular. Join FD.

"Then since AC : BC : : AE : BE,

and AB is bisected in F,

[by a known property] we have CE. FE = AE. EB,

Add EF^2 to each of these rectangles.

Then CF. FE = AF^2 = DF^2,

. · . CF : DF : : DF : EF,

or the triangles CDF and EDF are equiangular.

. · . angle CDF = angle DEF.

But the angle DEF is a right angle,

. · . the angle CDF is also a right angle, and

. · . CD touches the circle at D."

SYNTHESIS.

Premising the same preliminary construction as before, we find that—

"Because CD touches the circle at D,

the angle CDF will be a right angle;

and since DEF is a right angle,

the angle DEF = angle CDF and

the triangles EDF and CDF are equiangular.

. · . CF : DF : : DF : EF,

and . · . CF. FE = DF^2 = AF^2.

Take EF^2 from each of these,

. · . CE. EF = AE. EB.

But AB is bisected in F, and consequently

[by the preceding known property]

AC : BC : : AE : BE." Q. E. D.

FIG 1.

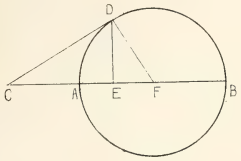


FIG 2.

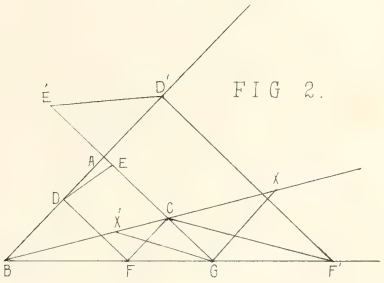


FIG 3.

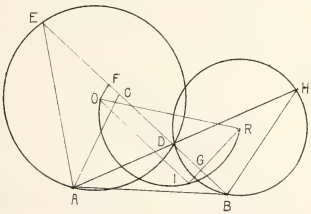


FIG 4.

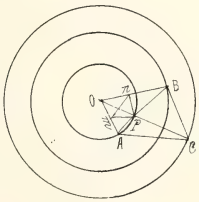


FIG 5.

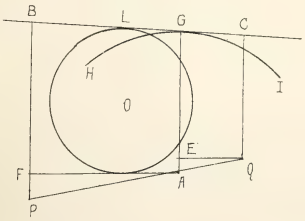
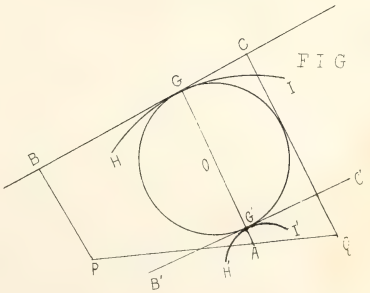


FIG 6.



ANCIENT ANALYSIS.

This theorem forms a fundamental proposition in the modern doctrine of poles and polars, with regard to the circle. C is the *pole*, DE the *polar*, and the enunciation merely states the fact that they divide the diameter, or indeed *any* line drawn to cut the circles, in harmonic proportion. The property is also true with respect to the conic sections, as may be seen by referring to La Hire's treatise on the subject, published A.D. 1685, and to many later works.

Almost the whole art of solving geometrical propositions consists in reducing the given data, and their relations to each other, to more simple forms. The greater the number of data, or their relative non-connection with each other, the greater, in general, will be the difficulty of the analysis. The object of this process is confessedly to diminish the number of separate data, until we arrive at the simplest possible conclusion, or the case where there is only one entity to determine; and hence we find that many of the more difficult geometrical inquiries are gradually traced through a series of more and more simple propositions, until we arrive at one respecting which there can be no difficulty. Thus, if it were required to solve the following:—

PROBLEM.

"In the triangle ABC, place a right line DE, such, that the non-adjacent segments DB, EC, and the line DE, shall have given ratios to each other." (Lamè's *Examen de Different Methodes en Géométrie.)*

ANALYSIS.

Suppose DE *(fig. 2)* to be the line drawn as required; draw DF and CF parallel to AC and DE respectively; also join BF and produce it to meet AC produced in G. Then AG : AB : : DF : BD : : EC : BD.

But EC : BD is a given ratio by hypothesis,
and consequently AG : AB is a given ratio.

The triangle ABG is therefore given and may readily be constructed, which reduces the problem to that of 'having given the triangle ABG and a point C in its base, to draw a right line DF parallel to AG, so that DF : FC may be a given ratio.'

Again, suppose the thing done, and draw GX parallel to FC, meeting BC produced in X, if necessary.

Then GX : FC : : BG : BF : : GA : FD.
And GX : GA : : FC : FD : : ED : EC.

But this last ratio ED : EC is given, and consequently the problem is further reduced to that of finding 'a point X upon the line BC such that GX : GA may have a given ratio to each other.' This is obviously nothing more than finding a fourth proportional to three given lines [and hence the analysis properly ends at this stage of the process]. It may be remarked, however, that there are two points X and X^1, which satisfy the conditions, and consequently the problem admits of the two solutions indicated by the diagram."

In like manner, if it were proposed "to describe a circle (O) to touch three given circles (O_1), (O_2), (O_3), whose radii are respectively r_1, r_2, r_3"; we may suppose the problem solved, and that an auxiliary circle is described with centre (O) to pass through O_1 and touch two circles having their centres at O_2, O_3, and radii $= r_2 - r_1$ and $r_3 - r_1$ respectively. Were this auxiliary circle actually described, or determined, the proposed object would evidently be accomplished; but since this is not the case, the question is now merely reduced to that of "describing a circle through a given point, which shall touch two given circles." By again supposing this latter problem solved, a very easy analysis conducts us to the *double* problem of "producing a given line, so that the product of its segments shall be equal to a given rectangle," and of "describing a circle which shall pass through two given points, and touch a given circle." The former offers no difficulty whatever, whilst the latter, by an almost obvious process, comes at once to the simple operation of "describing a circle through three given points;" and, consequently, by collecting the operations contained in the various steps of these analyses, the construction of the original problem is gradually evolved.

When a similar method of procedure is adopted, the "inscription of a polygon in a given circle, so that its sides and diagonals shall pass through given points" is reduced—*firstly*, to that of "describing a triangle in the circle," subject to similar conditions; *secondly*, to that of drawing two lines from two given points to intersect in the circumference of a given circle, such, that their chord of intersection shall be parallel to a given line;" *thirdly*, to that of "drawing a line through a given point, so as to cut off a given arc from a given circle;" and *lastly*, to that of "drawing a line

from the given point to cut the given circle, so that the intercepted chord shall be of a given length;" a problem which obviously requires no further reduction. Both of these general problems possess considerable historic interest. The former is well known as the principal case of Apollonius on *Tangencies*, whilst the latter, besides being intimately connected with the difficult subject of *Porisms*, has occupied the attention of several of the most eminent mathematicians, both of this country and on the continent. The principles of their various methods of investigation have been amply discussed by Professor Davies, in the third volume of the *Mathematician*, and Mr. J. H. Swale has reduced the whole to very simple processes in the two numbers of his *Liverpool Apollonius*.

The construction of plane triangles from given data has long been a subject much cultivated by non-academic and other geometers. Its interest is at least as old as Pappus, and it was pursued to a considerable extent in more recent times, by De Billy, Hugo D'Omerique, and other writers of later date. Sir Isaac Newton gave some examples of this kind, treated by Algebra, in his *Arithmetica Universalis*, and Thomas Simpson added many more general cases to the number, in the appendices to his treatises on *Algebra* and *Geometry*, but the full development of the system was reserved for the correspondents of our mathematical periodicals. Synopses of data for the construction of triangles have been published at different times by Lawson, Leybourn, Farey, and others; whilst the more intimately connected properties gradually evolved during the consideration of particular cases have been collected under the heads of "Modern Geometry," in the *Student;* "Symmetrical Properties" in the *Philosophical Magazine* and in the *Repository;* and the more recent "Horæ Geometricæ," in the *Lady's and Gentleman's Diary*. It does not, however, appear that the results have been at all commensurate with the vast amount of labor expended upon such constructions. Most questions of this nature may be more justly described as "ingenious puzzles," than as aids to the real progress of the student, and hence of late years the practice of proposing such problems has justly fallen into neglect. For occasional praxis, they may be resorted to with considerable advantage, but to carry them to the extent which they occupy in the *Mathematical Companion*, and other similar works, is "geometrical trifling" of the most unprofitable description.

In some instances, however, the analysis conducts us to results, or to

properties of the requisite diagrams, which no other process would readily supply; and not a few examples might be adduced where one or more of the great problems of antiquity lie hid under the disguise of the data for constructing a plane triangle. Thus, when "the base, the vertical angle, and the ratio which the line bisecting the vertical angle has to the difference of the segments of the base," are given, the construction is proved by Mr. Swale to hinge on a case of determinate section. When "one side an adjacent angle, the area, &c., of a quadrilateral," are given, the construction is reduced by the same author to a case of the section of space; and he received the "prize medal" for solving question 240 in the old series of the *Repository*, which contains several properties relating to the curious, and then little known, subject of porisms. In the *Leeds Correspondent*, the *Companion*, and other periodicals, we might point out other instances in which the tangencies, the inclinations, &c., are evolved from data, which at the outset contain no visible traces of any such close connection with these noted problems. All cases of this description ought to be excepted from those to which the preceding objections more particularly apply, since they obviously exercise the powers of the student, at the same time that they add to his knowledge of the ramifications of the leading problems of the ancient geometry. We may add, that when any proposed question had been reduced by analysis to a case of these "second elements," the Greek geometers were accustomed to consider it as sufficiently solved, and the moderns have generally followed their example in this particular. As an illustration of the method of considering a problem relating to the construction of a triangle, we may select the following from the very elegant *Lucubrations in Mathematics*, by the late Colin Campbell, Esq., of Dingle Mount, Liverpool, in which the analysis, construction, and demonstration are given at length.

Problem.

"Given the sum of the sides, the vertical angle, and the length of a line drawn from one of the angles at the base, to divide the opposite side in a given ratio; to construct the plane triangle.

Analysis.

Let ABC *(fig. 3)* be the required triangle, and AD the given line, dividing in D the side BC, which produce to E, making CE = AC, and join AE; draw BH parallel to AC, meeting AD produced in H, and O,

R, being the centres of circles described through ADE, DHB, demit OF, RG, perpendicular to EB, and OI to RG. Then CD : DB :: AD : DH, which is therefore given, consequently the circles AED, DBH, are given; therefore OR (joining their centres) is given, as is also OI = FG = ½ EB; hence the angle IOR is given, wherefore IO, and thence EB, being parallel to it, and passing through the given point D, is given in position.

Construction.

Make the third datum AD : DH in the given ratio of the segments into which one of the sides is to be divided by AD, and on opposite sides of AH, describe DBH, AED, segments of circles to contain the given vertical angle, and its half respectively; join O, R, the centres of the circles, and on OR describe a semicircle, to which apply the chord OI = half the given sum of the sides, and parallel thereto, through D, draw EB, in which take DC : DB :: AD : DH; and having joined AC, AB, ABC will be the required triangle.

Demonstration.

Join AE, and draw IR to cut EB in G; on EB demit the perpendicular OF; and because DC : DB :: AD : DH; AC is parallel to BH; consequently the angle DBH = ACB = the given vertical angle by construction. Also since the angle ACB = CAE + AEC = 2AEC by construction, the angle AEC = EAC, therefore AC = CE, and, consequently, AC + CB = BE = 2FG = 2OI."

Q.E.D.

When considering geometrical problems it frequently serves a useful purpose to examine the *number* of solutions of which they are capable, as well as the *limits* within which they are possible. The latter is by far the more difficult inquiry; for the process sometimes requires a greater amount of skill and sagacity than the analysis of the original problem. On the other hand, we are amply compensated for the extra labour by the discovery of a multitude of beautiful properties relating to the *maxima* and *minima* of the quantities under consideration. If, for instance, it were required "to draw through a given point a parallel to a given right line, there can only be *one* solution possible; but if we had a given point, and were required "to draw a tangent from this point to a given circle," there would obviously be *two* solutions to the problem. We may, in general,

draw *four* common tangents to two given non-concentric circles, and we find no fewer than *eight* different solutions to the general problem of describing a "circle to touch three given circumferences." If, however, we had "to construct an isosceles triangle on a given base," or "to describe a circle through two given points," we have evidently too few data in each case to limit the problems, and the solutions therefore become *infinite* in number. Such problems as admit of a certain number of solutions are styled *determinate*, whilst the name of *indeterminate* is applied to those which can be satisfied by an unlimited number of solutions. When the object of inquiry relates to the position of a point, and it is found that an infinite number of points can be assigned, each of which satisfies the requisite conditions, the line traced out by these points is termed a *locus*;—if we "make the construction of the figure a part of the hypothesis, we have what was called by the ancients a *local theorem*; and, again, if, in enunciating this theorem, that part of the hypothesis which contains the construction be suppressed, the proposition arising thence will be a *porism*." (*Playfair on Porisms, Edin. Trans.* vol. iii. p. 171.)

The locus of the vertex of the triangle, and of the centre of the circle, in the instances just adduced, are obviously the perpendicular bisectors of the base, and of the line joining the two points; the loci of the vertices of all the equal triangles which can be constructed on the same base, and of all triangles having the same base and equal vertical angles, are a straight line and a circle respectively; and most propositions of this nature might be transformed, if necessary, into their corresponding local theorems and porisms by adhering to the preceding instructions. "Every indeterminate problem," says Mr. Potts, in his excellent edition of Euclid, "containing a locus may be made to assume the form of a porism, but not the converse, for porisms are of a more general nature than indeterminate problems which involve a locus."

It is, however, to the utility of *loci* in the construction of geometrical problems that we would now more particularly direct attention. If it were required to "determine the locus of all points from which tangents drawn to a given circle shall contain a given angle," an easy process will show that *any* point of a certain circle, concentric to the given one, will possess the property required;—and the *use* of this locus becomes at once apparent when "two circles are given, and a point is required from which

tangents to the circles shall contain given angles;" for the intersections of the two circles corresponding to the preceding locus in each case will evidently give the positions of the points answering the conditions of the problem. When the base and vertical angle of a triangle are given, the locus of the centres of the inscribed and escribed circle touching the base is well known to be a circle, whose centre bisects the arc subtending the base, and whose radius is equal to the chord of half the same arc, and this locus is of constant use in the construction of problems relating to the data of Halley's Diagram. Many other simple loci are equally efficacious, and much advantage may always be gained by availing ourselves of their intersections amongst themselves, or with the other data, whenever they are found to occur in the analysis of a problem. An instructive instance of this will be found in the solution of the following question, which, besides being possessed of some historic interest, recommends itself to the notice of the student by the variety of methods which may be adopted for its construction.

Problem.

Place a triangle, similar to a given one, so that its angular points shall rest upon the circumferences of three given concentric circles.

Analysis.

Suppose the problem solved:—ABC (fig. 4) the required triangle; O the common centre of the three circles; OA, OB, OC, their radii respectively. Take any point m in OA; draw mn, mp, parallel to AB, AC, and join np. Then, since the triangle m n p is similar to ABC, it is given in species, and by reason of parallels we have,

$$AO : BO :: mO : nO$$
$$AO : CO :: mO : pO; \text{ whence}$$
$$mO : nO \text{ and } mO : pO \text{ are given ratios.}$$

But when two points and the ratio of two lines drawn from them are given, the locus of their intersection is a given circle, and, consequently, the point O is at one of the intersections of two given circular loci. Hence the following

Construction.

Make the triangle m n p similar to the given one, and determine the point O by constructing the two circular loci corresponding to m n, m p,

and the given ratios m O : n O, and m O : p O, respectively. Join O m, O n, O p, and prolong them until they are respectively equal to OA, OB, and OC. Lastly, with these radii describe the three concentric circles, join AB, AC, BC, and ABC will be the triangle required.

The *Demonstration* is obvious from the Analysis. Particular cases of the general problem of "placing a triangle, similar to a given triangle, so that its angular points shall lie upon three circles anyhow given in position and magnitude," have frequently occupied the attention of English geometers. Mr. William Wales considered one of its cases, when engaged in observing the transit of Venus, on the shores of Hudson's Bay, in 1768, and other varieties were noticed by Professors Wallace and Davies in the *Repository*, and in the *Gentleman's Diary*. Mr. Swale constructed and demonstrated the case just considered as question 229 in the *Leeds Correspondent*; and Mr. William Shepherd, of Bradford, has recently supplied an elegant discussion of the most general case of the problem in No. 1617 of the *Mechanics' Magazine*. For the sake of comparison we may append Mr. Swale's construction adapted to the preceding diagram.

CONSTRUCTION.

"Let m n p be a triangle similar to the given one, and O the centre of the given circles OC, OA, OB. Draw any radius OC; make the angle OCP = m n p, and OC : CP :: n p : n m; to the circle OA apply AP, so that n p : n m :: OB : AP; draw CA, CB, AB, making the angle ACB = PCO : — the required triangle is ACB." (*Leeds Correspondent*, vol. iii. p. 286.)

It remains to assign the *limits* of the problem. Since the loci intersect twice, there will in general be two distinct solutions; but when the circles *touch* at O, only one solution is possible; lastly, when the loci neither cut nor touch, the problem becomes impossible. When two of the given circles coincide, the construction and solutions remain the same as before; two of the angular points of the required triangle lie on one circumference, and O is determined by the intersection of a straight line and a circle;— but when all the three circles coalesce, the problem admits of no more than one solution, since the loci then become straight lines, and O is determined by their intersection.

We have previously remarked that the Greek geometers did not consider

any proposition as completely solved until they had examined every particular case and determined the limits within which the theorem or problem under consideration was possible. The determination of such limits constitutes what is now known as the doctrine of maxima and minima. "Such propositions," says Mr. Potts, in his *Appendix to Euclid*, "as directly relate to maxima and minima may be proposed either as theorems or problems. For the most part, however, it is the more general practice to propose them as problems; but this has most probably arisen from the greater brevity of the enunciations under this form. When proposed as a problem there is greater difficulty involved in the solution, as it is required to find the limits with respect to *increase* and *decrease*, and then to prove the truth of the construction; whereas in the form of a theorem the construction itself is given in the hypothesis."

In many of the more simple instances, however, it is possible to infer the maximum and minimum cases without a formal process. Thus in *Euclid* i. 22, the *minimum* case is, obviously, that when the sum of the sides exactly equals the base, and at this limit the problem ceases to be possible; also in *Euclid* ii. 5, the magnitude of the rectangle is easily seen to vary from zero to the *maximum* when the two segments are equal to each other; and again in *Euclid* iii. 7-8, we find the *maximum* and *minimum* cases on the lines passing through the centre, whether the given point lies within, on, or without the given circle. When two points and a straight line are given in position, the sum of two lines drawn from the given points to intersect on the given line will be a *minimum* when they make equal angles with that line; but if a circle be substituted for the line, the *minimum* takes place when the lines make equal angles with a tangent applied at the point of inflection, or with a diameter drawn to the same point, and the case of the *maximum*, or when the sum of the lines is the greatest possible, occurs under the same conditions at the opposite extremity of the diameter. The demonstration of all these properties is very easy when they are enunciated as theorems, nor do some of them offer much more difficulty even when proposed as problems. Such, however, is not the case when we have given two points and a circle, and it is required to determine a point in its circumference, such that the sum of two lines drawn from the given point to the required point shall be a minimum; for we thus transform one of the foregoing easy cases into "Alhazen's Problem," whose solution requires the aid of the conic sections, as has

been shewn *algebraically* in the *Philosophical Transactions (Hutton's Abridgment*, vol. viii.), by Huyghens, Slusius, and Catalan; and more recently by an elegant *geometrical process* in the appendix to Dr. Simson's *Sectiones Conicæ*, of which a translation exists in the MS. remains of the late Mr. Colin Campbell.

Maxima and minima cases of problems may also be very frequently detected by examining all the possible variations amongst the data when the problems are constructed for a *given* quantity, and numerous examples of this procedure might be selected from almost any of our mathematical periodicals. If two points and a straight line be given, and it were required to draw two lines from the given points to the given line, so as to form a given angle, the intersection of the line with the segment of a circle capable of containing the given angle, will, in general, determine two points which satisfy the conditions of the problem. When these two points of solution coalesce, the given line becomes a tangent to the circle, and the *maximum* angle is formed at the point of contact. In other instances the *minimum* case is derived with equal facility; but the following example, furnished expressly for this paper by Mr. Henry Buckley, of Wood House, Delph, will render any additional illustrations unnecessary.

Problem.

"Having two points PQ, and a circle (O), given in position and magnitude, it is required to draw a tangent BC to the circle, so that if perpendiculars PB, QC, be demitted upon it from the given points, m.QC + n.PB may be equal to a *given* line, a *maximum*, or a *minimum*.

Construction.

Divide PQ at A (fig. 5). in the ratio of m to n. With centre A and radius AG $= \frac{1}{m+n}$ the given line, describe an arc HI. Draw the common tangent BLGC to touch the arc and the given circle in G and L respectively, and it will be the one required.

Demonstration.

Demit PB and QC perpendicular to LG, and draw QE, AF parallel to BC, meeting AG and BF in E and F. Then m.QC + n.PB = m. GA — m. AE + n. GA + n. PF. But by construction and similar triangles we have m : n : : AP : AQ : : FP : AE. Or, m. AE =

n.FP ; $\therefore$ m.QC + n.PB = m.GA. + n.GA = (m + n) GA = the *given* line as required.

When AG passes through the centre O, as in fig. 6, and the tangent is drawn at the extremity G of the diameter, m.QC + n.PB will evidently be a *maximum*, since, by *Euclid* iii. 8, AG is then the greatest possible.

Similarly the *minimum* case occurs when the contact takes place at G′, for then, *Euclid, ibid,* AG′ is obviously the least possible ; and the problem is evidently impossible when AG, or AG′, neither cuts nor touches the circle (O)."

Q. E. D.

We have thus endeavoured to point out and illustrate a few of the leading characteristics of the ancient geometrical analysis. The subject is undoubtedly an attractive one to all lovers of pure geometry, and might be pursued to much greater length with reference to porisms, poles and polars, radical axes, anharmonic ratio, conjugate division of lines, &c., &c. ; most of which have been treated, more or less extensively, under somewhat different forms by the Lancashire geometers. The writings of Playfair, Wallace, Davies, Mulcahy, and Chasles, may, however, be referred to in default of such an extension, since enough has perhaps been done to direct attention to a branch of science which has held its place in a course of liberal education for upwards of 2,000 years. Its prosecution, beyond the mere *Elements of Euclid*, and a few easy deductions, has for some time been mostly abandoned for the more powerful coordinate methods, and the gigantic strides which both pure and applied mathematics have made in our own times would seem to justify the change.

We may, however, conclude by observing, in the words of Dr. Whewell (*Liberal Education*, pp. 29-30), that " wherever mathematics has formed a part of a liberal education, as a discipline of the reason, geometry has been the branch of mathematics principally employed for this purpose. * * * It is not too much to say that it is a necessary part of a good education. There is no other study by which the reason can be so exactly and vigorously exercised. In learning geometry the student is rendered familiar with the most perfect examples of strict inference ; he is compelled habitually to fix his attention on those conditions on which the cogency of the demonstration depends ; and in the mistakes and imperfect attempts at demonstration made by himself and others, he is presented with examples

of the more natural fallacies, which he sees exposed and corrected. He is accustomed to a chain of deduction in which each link hangs from the preceding, yet without any insecurity in the whole ; to an ascent, beginning from solid ground, in which each step, as soon as it is made, is a foundation for a further ascent, no less solid than the first self evident truths. Hence he learns continuity of attention, coherency of thought, and confidence in the power of human reason to arrive at the truth. These great advantages, resulting from the study of geometry, have justly made it a part of every good system of Liberal Education, from the time of the Greeks to our own."

This extract must form our apology to those who think lightly of mathematics as an exercise for the reasoning powers, for having treated so much at length upon the oldest, yet classical, forms of a favourite science. Pure geometry has ever been a leading feature in the writings of those mathematicians who have resided in the district which the Historic Society peculiarly claims as its own, and hence it may be presumed that a notice of the tendency of their scattered labours cannot be unacceptable in the pages of its transactions.

ON BABYLON;

AND ON THE DISCOVERY OF THE CUNEIFORM CHARACTERS, AND THE MODE OF INTERPRETING THEM.

By Dr. Julius Oppert,

MEMBER OF THE FRENCH SCIENTIFIC EXPEDITION TO BABYLON.

(Read 13th March, 1856.)

In attempting to convey my sentiments to a Learned Society in England, I must request the members to bear in mind that I express myself in a language that is not my own. I have long known, however, the extent of British hospitality towards strangers, as well during a long residence in the East as afterwards at their domestic hearths. This knowledge dissipates a great deal of the timidity and justified-hesitation with which I should make the attempt; and renders easier the task which I have set to myself, though it is still difficult.

I was appointed by the French Government to be a member of the scientific expedition to Babylonia. Our party was composed of M. Fresnel, the well known Arabic scholar, (who was brother to one of France's worthies, M. Augustine Fresnel,) of M. Thomas, a distinguished architect, eminent at the French Academy of Rome, and of myself. I shall have the honour to lay before you some of the results which we obtained, and afterwards to give some account of the state of cuneiform knowledge. I began the study of this subject in Europe, and afterwards continued it, with better materials and more success, in Babylon itself.

Besides the excavations which we had to undertake, we had been directed to survey the whole theatre of our explorations, and this department was undertaken by me. I spent nearly two years on the site of Babylon; and covered, with a netting of triangles, more than five hundred British square miles. I have been fortunate enough to find, in every instance, the true situation of Babylon corresponding with the territorial necessities; and in conformity also with the hints transmitted to us by the Holy Scriptures, by the Greek authors,—particularly Herodotus, Diodorus, Strabo, and

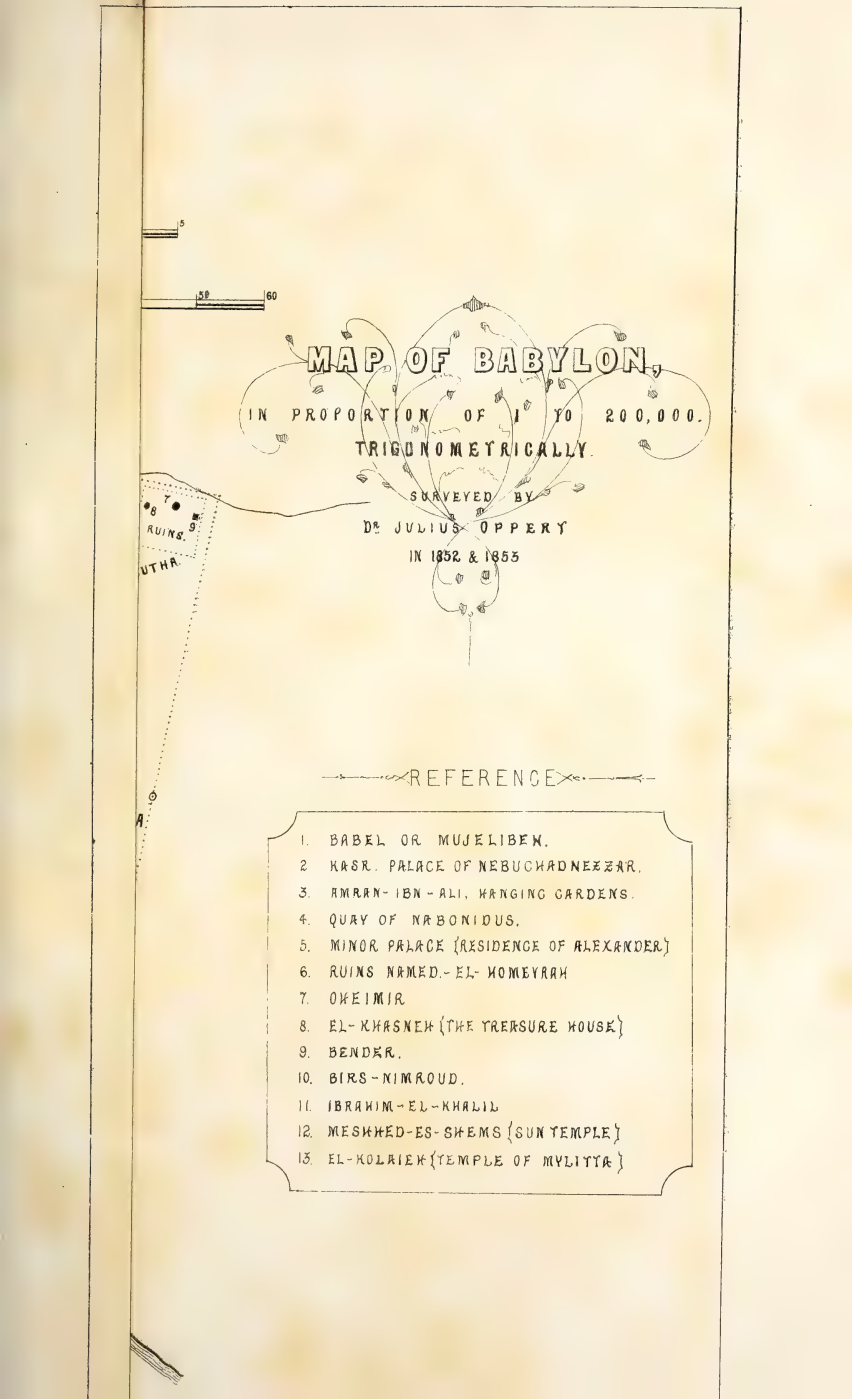
Curtius,—by the Babylonian Talmud, and by the cuneiform inscriptions, so far as their contents may be considered as satisfactorily known.

By the most simple means, I was successful in discovering the old Chaldean and Assyrian measures of length; and that discovery has been solemnly sanctioned by the illustrious Boekh of the Berlin Academy, who is justly regarded as one of the highest authorities on ancient metrology. Having observed the singular fact that all Babylonian square bricks are of the same size, and also that the whole of the stone slabs present a separate identity of magnitude, I measured 550 bricks and all the stone slabs I could find, with the utmost accuracy. I found that the side of the brick-square was to the side of the stone square, as *three* to *five*. The former being 0.315^{m} in length and the latter 0.525^{m}, the side of the brick-square was obviously the Babylonian foot, and that of the stone square a Babylonian cubit; and by a surprising but not fortuitous coincidence, the latter corresponds exactly with the Egyptian cubit. I found that the Chaldeans had a greater measure of 360 cubits, or 600 feet (*ammatgagari* in the inscriptions); and this greater itinerary length was the stadium of the Chaldeans. It was 189 French metres, 610 English feet, or only 14 feet longer than the Olympic stadium.

Both Nebuchadnezzar and Herodotus assign to the circuit of the walls of Babylon a length of 480 stadia; each side of the square must therefore have been 120 stadia, that is 22,680 metres or 14 miles. My trigonometrical surveys have, in the most satisfactory manner, proved the truth of my reckoning.

The great East India House Inscription of Nebuchadnezzar affords us another confirmation. The destroyer of the Salomonian temple says that his city covered a surface of 4000 *makhargagar*. The *makhar* is a square of 60 Chaldean feet in the side; the *makharyagar* 360 of those unities. The statement of Nebuchadnezzar is thus to be expressed by 5184 millions of square feet, what everybody may verify; and exactly the surface of the great square, the side of which was 72,000 feet.

Babylon filled thus a space of 514 kilometres, or almost 200 square miles. But this huge surface was not all inhabited; in the exterior enclosure, made by Nebuchadnezzar, were contained immense fields, which in the case of siege provided the city with corn and protected her from the horrors of famine. This exterior wall is said to have been destroyed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MAP OF BABYLON,
IN PROPORTION OF 1" TO 200,000.
TRIGONOMETRICALLY.
SURVEYED BY
Dr JULIUS OPPERT
IN 1852 & 1853
RUINS
UTHA
REFERENCE
1. BABEL OR MUJELIBEH.
2. KASR. PALACE OF NEBUCHADNEZZAR.
3. AMRAN-IBN-ALI, HANGING GARDENS.
4. QUAY OF NABONIDUS.
5. MINOR PALACE (RESIDENCE OF ALEXANDER)
6. RUINS NAMED.-EL-HOMEYRAH
7. OKEIMIR
8. EL-KHASNEH (THE TREASURE HOUSE)
9. BENDER.
10. BIRS-NIMROUD.
11. IBRAHIM-EL-KHALIL
12. MESHHED-ES-SHEMS (SUN TEMPLE)
13. EL-KOLAIEH (TEMPLE OF MYLITTA)

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MAP OF BABYLON.
TRIGONOMETRICALLY
BORSIPPA

by Darius, when he took Babylon. But there were, in the inside of that great circumvallation, five other walls, as the most important of the Babylonian writers, Berosus, assures us; and this statement is confirmed by the Babylonian inscriptions. If we call the first, or outer wall, A, the next concentric circumvallation may be termed B. This was a square in the same direction as A, but only of 360 stadia, (ten miles to a side). Concentric with this was a third, C, that enclosed the real city of the Babylonians, situated at the very spot of the town Hillah. This town was built in the eleventh century, when the Euphrates, which since the fifth century of our era had taken another direction, re-entered his old Chaldean bed. It is the custom of the oriental people to settle on ruins; so that most of their cities, and all their *Kubbets* and worship places, occupy the sites of more ancient buildings. The Muhammedan city of Hillah was built from Babylonian materials, and I dare say there is not a single room where a brick might not be seen stamped with the name of Nebuchadnezzar. The new settlers fixed upon the spot of Babylon and no other, for the very reason that materials were ready at hand for new colonists.

The real city of Babylon, C, was of a very limited extent; it was about as large as the part of Paris on the left bank of the Seine. Its boundaries are clearly indicated by old canals, that ran round in the direction of the two outer walls. I believe it to cover a surface of $4\frac{1}{2}$ square miles. Thus the city of Babylon may have had, I fancy, almost 300,000 inhabitants; while the whole population of the great Babylonian metropolis may have amounted to not less than a million.

The interior wall, B, is the second wall of Herodotus, and enclosed the inner city (ἔνδον πόλις), amounting to an extent of 110 English square miles; but besides this proper wall, the area within it contained the most important ruins of Babylon, the royal city, surrounded by a wall, D, of sixty stadia, which exists to the present day in almost its entire length. The reason of its preservation is very simple. Long after the Chaldean empire, the Parthian kings residing at the neighbouring Seleucia, made of the Babylonian palace gardens a hunting ground; they had, therefore, the walls restored to keep the prey properly secured. The other walls disappeared, and for a very simple reason also. The fortifications being built from the earth of the surrounding districts, protected only by a weak brickwork, they fell down into the canals from which they had been taken,

as soon as the bricks were pulled out for the purpose of being used elsewhere.

The whole of the remains of the surrounding walls, however, (A, B, and C,) could not be destroyed; and I have incontestible proofs both of their position and direction, in some Babylonian mounds. In making my surveys I ascertained that a straight line was formed by three hills, in the direction of 10° N.E. and S.W. Their names are, Tell Ghazaleh, Tell Schetiteh, and Tell Zawîyeh, and they are distant from each other about two miles. Far from these I observed a range of hills, in length about six miles, and in the direction of 80° N.W. and S.E. It cuts the former range at a right angle, and the point of intersection is the Tell Zawîyeh, whose name signifies in Arabic, *corner-hill*. This coincidence could not be fortuitous. I saw at once the perpetuation of the historical fact, that the north-west corner of the inner wall B of Babylon had been at this spot. Long afterwards, I found that a range of tumuli, in which the most prominent are named Tell Harkeh and Tell Seid, are just in the direction of 10° N.E. and S.W., and parallel to the western corner-hill range. Having the corner of a square and two opposite sides in position, it was not very difficult, of course, to complete the figure; and, to my great gratification, all subsequent discoveries contributed to corroborate this deduction.

I have now spoken of the walls A, B, and C. It remains to notice the three others. In the north of the Babylonian city, situated between the concentric walls B, C (πολις), was the royal city (βασιλεία), and distinctly separated by Arrian from the former. The wall that surrounded it on both sides of the river is still existing in parts, and agrees most accurately with the notices which are taken of it by Herodotus, Ctesias, and Diodorus. All modern writers,—as Niebuhr, Rich, Ker Porter, and Fraser,—have seen in this the ancient royal city; and they are right. Only Rennell, whose views have, I believe, been adopted by Sir Henry Rawlinson, sees in that part of Babylon the whole town; but his opinion has been already refuted by Rich. Notwithstanding the respect due to these two gallant officers, I am always asking myself how Rennell and my illustrious friend Rawlinson explain the testimony of Herodotus, Ctesias, Berosus, Clitarchus, Diodorus, Strabo, Arrian, Philostratus, Athenaeus, Pliny, Curtius, Plutarch, and other more modern writers; whose remarks are all corro-

borated by the discovery of the inscriptions, and by the most eloquent speaker—the ground itself.

The royal part of Babylon, which is two and a half square miles in extent, contains, from north to south, the following:

(1) The ruin Babel, an ancient temple of the lord of Gods, Merodach; afterwards a fortress, attacked in vain by Demetrius Poliorcetes.

(2) The ruin Kasr, the royal residence of Nebuchadnezzar.

(3) The ruin Amran-Ibn-Ali, the hanging garden of Babylon.

We found in 1853, when the waters of the Euphrates had sunk to a formerly unknown level, a large construction in the water; and we were able to trace its course for about three miles. The inscriptions on the bricks composing that gigantic work clearly proved it to be the quay of Nabonidus, mentioned by Berosus We had, therefore, a new proof that the river in the period of the Chaldeans flowed as it does in our own time, (some fluctuations excepted,) and that it never went out of its bed in the very singular manner that Major Rennell was obliged to suppose, in order to explain a mis-understood passage of Diodorus. Rennell interpreted the passage as if the Sicilian writer had said that the palace was on the western, and the tower of Belus on the eastern side. He took Babel for the latter and the Kasr for the former, and was thus obliged to admit that the Euphrates, in the Chaldean epoch, flowed between these two ruins. This opinion is a mistake; and, moreover, the Greek author did not say so, but stated actually that the palace was on the side of the Euphrates looking towards the west, that is, on the oriental side in Mesopotamia, while the tower was on the opposite side in Arabia.

In the zone between the walls A and B,—viz. the wall of 480, and that of 360 stadia,—were the two other parts of this great town of Babylon. In the N.E. exists a mound which may be seen from a great distance. Its name is Oheimir, and it is situated nine miles from Hillah. Here was one of the cities of Cuta, and I believe the mound in question to be the ruins of the temple of Nergal. Seventeen miles from this place, at the south-west, equally between the walls A and B, and almost in the diagonal of the great Babylonian square, is a much more interesting ruin, well known under the name of the Birs Nimroud.

Fraser and Ainsworth had already proposed the identification of these ruins with the place anciently named Borsippa; we found in 1852 the confirmation of that opinion, in a little clay cake brought from that place, and marked from Borsippa (Borsip). The Talmud believes Borsip to be the scene of the confusion of languages. I explained the meaning of the term "Borsip" a long time ago, as the *tower of languages.* This opinion is confirmed by the cuneiform writing itself; the name Borsippa is often written in an ideographic way, signifying city of the dispersion of tongues.

It is possible, but not at all proved, that this temple was consecrated to the *seven spheres.* This is Sir Henry Rawlinson's view, but I wished to translate the term the *seven lights of the earth god.* The cylinders found there by the learned Sir Henry, speak of other monuments restored by the mighty ruler, who rebuilt the ancient temples of his metropolis after he ascended the throne. It was also sacred to the god Auv, or U, the representative of intelligible light, who had a temple at Borsippa. Nebuchadnezzar says, this god "had the temple of prophecy made in my country;" and hence the story of the tomb of the god Belus. This light god was confounded by the Greeks with the god Belus: but the confusion was the more pardonable as all the gods had the epithet of "bel," or "lord." By all means, then, this temple of Borsippa is the temple of the Bel of Herodotus; and since the recent excavations of Sir Henry Rawlinson, more than ever. But it is not the temple mentioned by the better instructed Arrian, who spoke of the veritable temple consecrated to Belus, in the middle of the city of Hillah.

Borsippa was a suburb of Babylon; but it was a part of Babylon, just as Westminster is of London. King Sargon, in the inscriptions, speaks of his constructions at *Sipar, Nipur, Babylon;* or of the same at *Sipar, Nipur, Babylon,* and *Borsip;* and in the Assyrian inscriptions, at least, Borsippa never appears without Babylon. Nebuchadnezzar mentions the wall with which he surrounded the city of Borsippa, and this passage is to be found between those who speak of the inner and the exterior walls. The latter included, after the time of Nebuchadnezzar only, the formerly independent Borsippa. We see, in one word, the same phenomena,—of extension and absorption of more remote boroughs into the great metropolis,—which we have remarked during several centuries in almost all the capitals of Europe.

But the exterior wall having been destroyed by Darius, the borough of the " tongues-tower " became again separate from Babylon ; and so we find it in Alexander's time, when the Chaldean city had only 360 stadia (40 to 42 miles) of circumference. The destruction of this gigantic circumvallation is the reason of the discrepancy between the Alexandrian writers and the father of history.

I could mention many other ruins, but I shall only speak of a little square mound, the forms of which are so regular, that it is called Mukhattat. It is situated out of Babylon, in a plain, which is named at the present day as it was in the days of Nebuchadnezzar, Dura. If there ever was a golden statue of this king, it was here on this spot; and the mound Mukhattat was its pedestal.

A more detailed account of Babylon, as it was, would be out of place here, however interesting it might be in general, to follow the steps by which, in successive centuries, it became what it is. Only permit me to add, that by a singular predestination, this city of Nebuchadnezzar became, for about a thousand years, a town of the Jews, who founded on the very spot of their exile, their most renowned schools. With the abandonment of the Jews in A.D. 1037 only, the very name of Babylon disappeared, and was replaced by that of the town Hillah ; every stone of which attests its glorious origin. Thus fell Babylon, or rather, thus it died. It was deserted, according to the prediction of the Prophets ; and when we consider what Babylon was, and what it is, we cannot deliver ourselves from the melancholy question, if a similar destiny should be reserved in time for our great cities. We hope not; and our hope finds its most mighty support in the consideration of a difference which I need hardly specify to a British audience, in the appreciation of European civilization, which on the very spots of Babylon and Nineveh seeks its lessons for humility, and which has revived the language and civilization of the Mesopotamian people, after they had been buried for two thousand years !

In my notice of Babylonian topography, I have several times referred to the cuneiform inscriptions ; and you are of course entitled to inquire, whether this most mysterious form of writing is sufficiently known to afford a basis for historical and geographical research. I shall now reply to this question, in exposing, as succinctly as possible, the present state of our knowledge.

Before all else, Science is indebted for the rapid progress which cuneiform knowledge has made in our own time, to those courageous men who devoted themselves to the excavations of ancient Chaldea. After the first discoverer, Botta, it is M. Layard, to whom belongs the merit of having brought from the darkness to light, the most important documents. After him, I must name, of Englishmen, in the first place, M. William Kennett Loftus, whose diggings at Susa, Warka, and Nineveh have cast so great a light over that branch of ancient history. Great treasures were brought up by the efforts of M. Taylor, in Lower Chaldea, and M. Hormuzd Rassam at Nineveh; and I may close the names of excavators by one of the most successful, M. Victor Place, who, walking in the steps of his predecessor Botta, laid bare the great palace of king Sargon, at Khorsabad. These are the men who have furnished the bulk of the material on which the cuneiform scholars may work; and I may be allowed to trace also the names of those to whom Science owes the revelation of the epigraphic mystery of cuneiform knowledge.

The first and the most meritorious discoveries were made by the late Director Grotefend of Hanover; he is regarded as the first decipherer of cuneatic writing. It is unnecessary to enumerate the scholars who prepared the explanation of the Assyrian inscriptions by the previous interpretation of the Persian translations; I will only notice those who began the decipherment of the Assyrio-Chaldean writings. The exposition of the very genius of this figurative expression of human thought will show why the progress was so slow; why every pace forward had to be conquered by continuous and everlasting investigation.

The Assyrian documents would never have shed their light on the primordial history of mankind, they would never have corroborated the facts narrated in the Holy Scriptures, if the old Persian kings, rulers of Asia, had not felt the necessity of promulgating their decrees in three languages. One of these tongues was the old idiom of Xerxes; another, as I believe, that of Scythia; and the third was the language of Nineveh and Babylon. After the discoveries of Botta and Layard, several attempts were made to decipher the Babylonian transcript by the aid of the Persian translation. The first paper of M. Löwenstern on that subject was very insufficient; but those who followed him were more successful. Already in 1847, M. Adrien de Longpérier, now member of the French Institute,

read the first name of an Assyrian King; and in proving the name Khorsabad to be identical with the biblical Sargon, he has the merit of having closed the period of uncertain wavering about the age of Assyrian art. M. de Saulcy followed him in attempting for the first time to give the translation of a whole inscription. This first and courageous essay afforded to science statements which are not only certain but highly interesting.

Soon after, Dr. Hincks published his paper on the Khorsabad inscriptions, and, for the first time, proved the syllabical mode of Assyrian writing. By this discovery, he is evidently the man who has contributed in the largest degree to the decipherment of cuneatic inscriptions. Sir Henry Rawlinson was at first inclined to admit, like M. de Saulcy, the mere alphabetical character of the cuneiform writings; and he was already able to profit by the astonishing discovery of Dr. Hincks, when he published in 1851 the Assyrian text of the Behistun inscription. For this, science is highly indebted to his powerful penetration, his indefatigable courage, and everlasting activity. The document of the work of Behistun, although in a very mutilated state, is the most important clue that destructive time has yet allowed to reach our age.

Sir Henry Rawlinson also found a certain principle, the existence of which, indeed, nobody would have expected. He found that one sign in Assyrian might signify several sounds; and this peculiarity, which he designated by the name "polyphony," was so abnormal and so contrary to the very spirit and end of writing, that many people contested his conclusions, from that seemingly-awkward principle alone. Yet he was right in adopting it, and I looked on this step as an act of scientific desperate resolution. I shall have the honour to give my explanation on this subject, and on this occasion, a glance at the scientific peoples of Asia.

There are only, according to my researches, two classes of cuneiform writing. These I name *arian* writing and *anarian*. The former is alphabetical, and contains only the Medo-Persic mode of writing. The latter is syllabic and ideographic; and the same writing served to express five languages, different each from the other, viz., Assyrio-Chaldean, Armenian, Susian, and two Scythian classes of languages. Our European alphabet, in like manner, serves to express a great many idioms. One of the cuneiform systems is more generally known under the name of the

second class of Persepolitan writing; the second and third are the same, but merely in different styles. M. Norris showed also the identity of forty-five characters, and I have ascertained the same thing in reference to forty-five others, of the so-named Scythic characters.

This writing was at first hieroglyphic; and I have found nearly twenty of the characters derived in form from the very images of the objects which they severally expressed; but as it occurred naturally, the ideographic writing became in part syllabic. Now, five languages use the same syllabic and the same ideographic images. It is clear, for example, that when in the Susian and Assyrian languages the *syllabic* sound *an* is represented by the same sign, the Susians and Assyrians will agree in giving to it the same pronunciation. But while this same character represents also the ideas of *star* and *God*, it is likewise evident that it could not in that case have the same pronunciation in the two countries.

It is evident, on the other hand, that one people must have invented this kind of writing, and have transmitted it to the other. The disciple-nation took not merely the idea inherent in the sign, (as *God*, or *star*,) but also the syllabic value that expressed the idea of the master-people. But that value was not sufficient for the second language to explain the idea, and, therefore, the latter people were forced to adopt a new value for the character. This lingual transmission, by one nation to another, explains the very singular fact of the polyphony.

This variety of sounds, related to a single character, is moreover explained by the hieroglyphic origin of cuneatic writing. An image can only represent a visible object; but how did people express abstract notions? Everybody will answer, with us, by a symbol; thus strength may have been represented by the figure of an arm, royalty by a sceptre, and so on. Thus you will not be astonished that one sign had often several meanings, one concrete and several abstract. We know by M. Layard's documents that actually the ideas of "brother" and of "protecting" were expressed by the same ideographic character. In a similar manner, the notion of "light" represented equally the two verbal ideas of "warming" and "engendering;" that of "town" replaced the verb "to multiply," exactly as the Sanscrit *pura* "town," and *puru* "many," or the Greek πόλις and πολυ derive from the same radical.

Not only the direct notions expressed by the image, but also the derived ones, were transmitted, with their respective sounds, by the first inventors to their disciples.

A highly interesting ethnological inquiry is, What people first invented this kind of writing? Everything goes to prove that it was not the Assyrio-Chaldean people. In a lecture which I delivered some time ago, before the Académie des Inscriptions et Belles Lettres at Paris, I had the honour to prove that it was the people who spoke the language of the second species of Achemenian writing, and that this idiom was a relative to the Scythic of Herodotus. From many facts, indeed, we acquire a conviction that there existed a Tartar civilization in Asia, before the Semitic and Arian conquests. We have not leisure to enter into the discussion of this subject at present; I will, therefore, only lay before you a complete syllabarium of the anarian language, as complete as the present time admits of.

I should, however, be glad to say a few words about the present state of our knowledge on that subject. We understand now many passages of the historical inscriptions, and we may determine the sense of many others; but in almost all cases it is extremely difficult, if not impossible, to prove demonstrably the true meaning. We have not yet arrived at a very high degree of knowledge of the language; and though the decipherment may be considered as almost finished, the great question is the interpretation of the documents, which are truly transcribed and pronounced. Or, we must have the courage to admit our ignorance, and not fear the words γνωθί σεαυτον. We must avoid making illusions to ourselves on that subject; and, in the very interest of science, not wish other people to believe that we know more of these things than we do. It is already a very great thing, it is an enormous fact, that we look into these questions as we do; and this decipherment is really one of the triumphs of modern science. We have, therefore, a right to claim indulgence.

The documents of which I am speaking corroborate the facts of the Bible, and sometimes they contradict them, for the Assyrians, like ourselves, were subject to error. When there is a contradiction, people say that it is an argument against the correctness of the decipherment. When king Yehu is said on the obelisk of the British Museum to have been the son of Omri, you should not attack the man who reads what is written, but the

man who wrote it. It is not we who are mistaken, but the Assyrians who were so in their statements on Jewish matters.

I shall now, in conclusion, give some examples of the inscriptions; and I shall commence with the shortest. M. Loftus found amid the ruins of the palace of Sardanapalus, some images of dogs, and on these dogs were written the names which the Assyrian monarch gave to them. The manner in which I explain the words, confirms, I fancy, both the readings and the explanation. One dog is named *Munashiku garishu*, [he bites those who excite him]; another *Dan rigishshu* [the leader of the pack]; a third *Kashid aibi* [grasping the enemy]; and a fourth *Mushissu shilikat?* [exciting the grey-hounds?]

The proper names on the cylinders have also been explained; out of the mass, I will only mention here the cylinder of a Jew, which is now in Paris. He was named *Abshalum*, and was the slave of a Chaldean; the cylinder is apparently the seal of a Babylonian captive.

I cannot refrain from noticing the extreme difficulty there is in reading the names of Assyrian kings, from their being written in monograms. Nothing is easier, indeed, than to decipher a foreign name in the cuneatic inscriptions; but nothing also, I dare say, is more troublesome than to assimilate an Assyrian king to a monarch known either from the Bible or from the Greek authors. There is a name common to several Nineveh kings composed of three signs which I read *U-likh-khus*, and in which I see with Sir Henry Rawlinson the prototype of the Greek Belochus. This name was borne by the seventh and twelfth descendants of Belitaras, founder of the second dynasty. The latter Belochus is identified with the biblical Pul by my illustrious friend, but I regret to say, that as well chronological as historical reasons forbid me to adopt his views. The Pul of the Bible was an usurper, but the Belochus of monuments, the husband of Queen Semiramis, a very legitimate king. One was Babylonian, the other Ninevite. One was called Pulli, the other Ulikhkhus. I dare say that Dr. Hincks shares completely my chronological views on Sir Henry's system. I even owe to the Irish scholar the cognizance of the most decisive facts on that subject. I may add, that the last pronunciation, *Pulukh*, proposed by the eminent interpreter of the Behistun inscription, is as little satisfactory as the readings adopted by him precedingly, viz.,

Hevenk, Adramelech, and Pallukha. I think, we may without any difficulty prove, that this name cannot be read *Pulukh;* and I feel myself authorized to oppose to the identification of the twelfth descendant of Belitaras with the biblical Pul, the most absolute and the most decisive denegation.

In order to give an idea of the Assyrian style, I shall now produce the translation of some fragments written on the Sargon cylinder, from Khorsabad.

> "Sargon, formerly Belpatisassur, worshipper of the god Ashur, keeping the mysteries of Oannes and Dagon, great king, mighty king, king of legions, king of Assyria, king of the four countries, creature of the great gods, slave of the existent being, to whom Assur and Merodach allowed the empire of nations, recording his name, compelling to war against wickedness. Who made the Mole of Sippara, Nipur, and Babylon, favourable to their inhabitants, obedient to their wisdom; fuller of the clothes* of the Phalgi.....forcing to contribution the tribes of Israel, transporting their population.....Who from the commencement of his reign spared not the kings his enemies, who never saw rest from battle and fight, who crushed like *hesbet*† the lands and their rulers; the four cardinal points were arrosed with blood. The fields and the castle in their subjection I took them. I saw their destruction. I the king who ruled from Ras under the dominion of Elymais, Bucud, Daman, Hisrigalzi, the town of Rapik, the land of Amutsabi(?), to the boundaries of Egypt, Aharri [Phenicia] the mother of the Hittites. From the land of Khashmar to the town of Simaspatti in the remote Media, at the rising of the sun; from Scythia, Albania, Bit Ham Can, Parthia, Van, Ararat [Armenia], Colchis, Tubal, to the Moschi reached the power of his arm; he constituted over them magistrates, and other people, and imposed on them tributes like to the Assyrians: the just, the strong, who transported Israel into knighthood, who vanquished Humbanigas, king of Elam and the Namruma..... who attacked the house of Omri with force, who defeated Egypt at the town of Raphe;

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* A talmudical expression for King. It is quoted in the talmud and explained by "King."

† The blue face-paint.

Hanan king of Gaza, his ally, he brought to Assyria; attacking the Tamudeans, Ibadid, Warsimani, Hayapa.....cheating the sense of the house of Omri, captain of the vessels which crossed like fishes the sea of Ionia with courage, transplanting the land of Kui and Tyrus.....who tried Bit, Burutash the king of whom Ambarissi doubted of the power of Sargon, they trusted to Armenia and the Moschi; they were humiliated entirely;—who punished Mita king of the Moschi, and who took with him the spoils of the land of Kui.....who declared war to Armenia, plundered the city Mussasir that Ursaha king of Armenia, in his great deference in the service of his superiors..... .....sweeping away Andia, Zikartu, the people of whom I slew entirely; in the lands of my enemies rushed the terror of death.....I have taken the land of Media without tax, I have taken the people of Kharkhar, I have enlarged the empire of Assyria."

The king continues then in the enumeration of some other reduced nations, and speaks afterwards of the building which he erected in the tower of Hisri Sargon, which he named after his name, and which is the modern Khorsabad. I omit those most difficult passages. I shall only speak of the doors which he built, because here the actual excavations confirm our reading and translations.

"I made, in the direction of the four cardinal points, eight great doors.* The god Shamash [the Sun] lets me take my possession; the god U creates my..... the great door of the god Shamash and the god U, I named thus the door on the side of the East. Belus-Dagon found the reservoirs of my city, Taouth prepares in her bosom the stone of painting [fucus]. The great door of the South I consecrated to the god Belus-Dagon, and the goddess Taouth. The god Anu who finishes works of my land, the goddess Istar [the Moon] inflames its inhabitants. The great door on the side of the West I made to the god Anu and the goddess Istar. The god Nisroch directs the marriages of men, the goddess Belitilüi [Mylitta] prospers the births of men, I named on the North, the great door of Nisroch and of Mylitta. The god Assur gives victory to the standard of the kings who adore him (lit. "who make him"); he protects the army of their fortress. The god Ninip sets..... for long days give him the victory."

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* The cylinders say *eight*, the Bull inscriptions *four*.

After this, the inscription concludes as follows :—

> " The gods who inhabit heaven and earth and this city, have blessed all ; they listened favourably to me while I invoked them, in building the town and in performing the holy rites. But he who infests the works of my hand, who defaces my pictures, who mingles the earthern jars of my treasury, who tears my clothes, that the gods Ashur, Shamash, and U, and the gods inhabiting his heart, may sweep away from this country his name and his family, and may calamities put him into the knighthood of his enemy."

It is only right to mention that of sixty-seven lines I have been able to translate but thirty-one. The remaining thirty-six are still a mystery to me, although I perceive their general sense.

I will now conclude with a short Babylonian inscription, remarkable because King Nebuchadnezzar is boasting to have " confounded the new lie," and we may easily infer what is the meaning. The destroyer of the temple of Jerusalem, blinded by his successes, styles himself ' the King who cannot be compared to any other,' and we may explain that by the words of the Prophet,* who warns the people that the promises of escape from the King of Babylon were all untrue. Here is the inscription :—

> " Nebuchadnezzar, King of Babylon, great, majestic, builder of Bitsaggata and Bitzida,‡ son of Nabopolassar, King of Babylon. I, I say,—Nabopolassar my father commenced the great walls of Babylon.....I dug out the trenches, and elevated highly its towers in bitumen and bricks. The god Merodach, great lord, strengthen my arm ; we have confounded the *new lie ;* accept graciously my prayer thou god ; to this realm grant succession for remote days."

The interest which attaches to questions of this kind is steadily increasing, and this, I trust, will be a sufficient apology for entering into it as I have now done. And permit me also to add, that if these archæological studies are not of immediate practical utility, they are at least contributing to the

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* " Therefore, hearken not ye to your prophets, nor to your diviners, nor to your dreamers, nor to your enchanters, nor to your sorcerers, which speak unto you, saying, ' Ye shall not serve the King of Babylon,'—for they prophecy *a lie* unto you."—Jerem. xxvii. 9, 10.

‡ Two Scythic words explained in the syllabaria.

great work of civilization. I shall not speak here of scanty historical facts, such as lists of kings formerly unknown, and of whom we still know nothing more than the names; but of the general lessons given to our century by the entire revelation of such powerful civilizations as were those of Babylon and Nineveh. And if these scientific studies only served to show the exactness of the historical facts contained in the Holy Scriptures, would they not be of great importance? The present age, therefore, may not refuse to cast a glance back on its less privileged predecessors, which illustrate more clearly than we knew before, the primeval period of mankind.

ON THE METHOD OF TESTING MARINE METEOROLOGICAL INSTRUMENTS, RECENTLY INTRODUCED AT THE LIVERPOOL OBSERVATORY.

By John Hartnup, Esq., F.R.A.S.

(Read 17th April, 1856.)

It will probably be remembered that in the year 1853 a conference of maritime nations was held at Brussels, on the subject of meteorology at sea. The report of this conference was laid before Parliament, and the result was a vote of money for the purchase of instruments and the discussion of observations, under the superintendence of the Board of Trade. Captain Fitz-Roy, of the Royal Navy, an officer well known for his zeal and great practical experience in these matters, was appointed to superintend this new department of marine meteorology. Arrangements were made, in accordance with the views of the Royal Society and the British Association for the Advancement of Science, for the supply of instruments properly tested. A committee called the Kew Committee was appointed for this purpose, and the Kew Observatory was at first fixed on as the sole place for testing these instruments. Arrangements were, however, subsequently made for testing barometers and thermometers at the Liverpool Observatory; and it is a brief description of these arrangements, together with a few examples, the results of our experiments during the past few months, that I venture to hope may not be found uninteresting to the Scientific Section of the Historic Society.

In the barometers now in general use by meteorologists, the diameters of the tubes are nearly equal throughout their whole length, and a provision is made for adjusting the mercury in the cistern to the zero point, previous to reading the height of the top of the column. The object of the latter arrangement, it is well known, is to avoid the necessity of applying a correction to the readings for the difference of capacity between the cistern

and the tube. At sea, barometers of this construction cannot be used. The tube of the marine barometer must be very much contracted to prevent the "pumping," and the motion of the ship would render it impracticable to adjust the mercury in the cistern to the zero point. In the barometer usually employed on shore, the index error is the same throughout the whole range of scale readings, if the instrument be properly made. In nearly all the barometers which have till recently been employed at sea, the index correction varies throughout the whole range of scale readings, in proportion to the difference of capacity between the cistern and the tube. To find the index correction for the first-named barometer, a comparison with a standard at any part of the scale at which the mercury may chance to be standing, is generally considered sufficient. To test the marine barometer is a work of much greater labour, since it is necessary to find the correction for scale readings for every half-inch or so throughout the range of atmospheric pressure to which it may be exposed, and it becomes necessary for us to have recourse to artificial means of changing the pressure of the atmosphere on the surface of the mercury in the cistern of the barometer. The first successful attempt to do this was, so far as I am aware, made at the Kew Observatory by Mr. Welsh. In December, 1854, I saw the apparatus for accomplishing this object, in operation at the observatory above named; and the apparatus which we now have at the Liverpool Observatory is of a similar description, with such improvements as were suggested by Mr. Welsh, from his experience at the Kew Observatory.

The barometers intended to be tested, together with a standard, are placed in an air-tight chamber, to which an air pump is applied, so that by partially exhausting the air, the standard can be made to read much lower than the lowest pressure to which marine barometers are likely to be exposed; and by compressing the air it can be made to read higher than the mercury ever stands at the level of the sea. The tube of the standard is contracted in a similar way to that of the marine barometer, but a provision is made for adjusting the mercury in its cistern to the zero point. Glass windows are inserted in the upper part of the air chamber, through which the scales of the barometers may be seen; but as the verniers cannot be moved in the usual way from outside the chamber, a provision is made for reading the height of the mercury independent of the verniers attached

to the scales of the respective barometers. At a distance of some five or six feet from the air-tight chamber a vertical scale is fixed. The divisions on this scale correspond exactly with those on the tube of the standard barometer. A vernier and telescope are made to slide on the scale by means of a rack and pinion. The telescope is armed with two horizontal wires, one fixed, and the other moveable by a micrometer screw, so that the difference between the height of the column of mercury and the nearest division on the scale of the standard, and also of all the other barometers placed by the side of it for comparison, can be measured either with the vertical scale and vernier or the micrometer wire. We therefore possess the means of testing barometers for index error in any part of the scale, through the whole range of atmospheric pressure to which they are likely to be exposed, and our usual practice is to test them at every half-inch from 27·5 to 31 inches.

Upwards of seventy barometers of various descriptions have already been tested in this way at the Liverpool Observatory, and the errors are often found to be so large that, independent of the necessity for finding the corrections in order that the readings of different instruments may be compared with each other, the advantage is of no small importance to captains, as we meet with some barometers which read half an inch and upwards too high, and others which read as much too low. In some cases those which are correct in one part of the scale are from half an inch to an inch wrong in other parts.

It is a very common fault, in the construction of the marine barometer now in general use, that the cistern is not large enough to hold the mercury which descends from the tube in a low atmospheric pressure. We have met with some in which the mercury would not descend lower than about 29 inches, from the above-named cause; and it must be evident to any one, that such barometers are calculated rather to mislead than to assist the judgment of the mariner.

The practice which has for so long been adopted of mounting the marine barometer in wood is very objectionable; and the instrument recently introduced agreeably to the recommendation of the Kew Committee, is greatly superior to any other description of marine barometer which we have tested, as regards the accuracy with which it indicates the pressure of

the atmosphere. A description of this barometer is given in the Report of the Kew Committee to the British Association for the Advancement of Science, by Mr. P. Adie, the maker of the instrument. The barometer now exhibited is one of Mr. Adie's, with the various improvements which have been effected since its first introduction. The diameter of the cistern is about an inch and a quarter, and that of the tube about a quarter of an inch. The scale, instead of being divided into inches in the usual way, is shortened in the proportion of about 0·04 of an inch for every inch. The object of shortening the scale is to save the trouble of applying the correction for difference of capacity between the cistern and the tube. The perfection with which this is done may be judged of from the fact that of the first twelve barometers tested at the Liverpool Observatory with the new apparatus, the index corrections in the two pressures of 28 and 31 inches in three of them were the same; two differed 0·001 of an inch, and for the remainder the differences ranged from 0·002 to 0·006 of an inch. The correction for capacity may therefore be considered sensibly perfect; and there can be no doubt whatever of the practicability of correcting for capacity the standard barometers ordinarily used on land in the same way, and thereby doing away with the necessity of adjusting the mercury in the cistern to the zero point before each reading. The twelve barometers above alluded to were first tested at the Kew Observatory, and then forwarded to the Liverpool Observatory by the railway. At Liverpool they were tested again, in order to see if any change had taken place from the shake of the railway carriages in a journey of upwards of 200 miles. In six of the twelve barometers the index errors were found to be the same at Liverpool as had been given at Kew. Three differed 0·001, two differed 0·002, and one differed 0·005 of an inch. I think it will be admitted that this is a degree of perfection highly creditable to Mr. Adie, the maker of the new marine barometer.

In order to stop the pumping of the mercury at sea, the tubes of these barometers are so contracted, that when first suspended, the mercury is about twenty minutes in falling from the top of the tube to its proper level. When used on shore, this contraction of the tube causes the marine barometer to be always a little behind an ordinary barometer, the tube of which is not contracted. The amount varies according to the rate at which the mercury is rising or falling, and I have found it to range from 0·00 to

0·02 of an inch. At sea it is thought that the motion of the ship causes the mercury to pass so much more rapidly through the contracted tube, that the readings will be sensibly the same as they would be if the tube was not contracted. For stationary purposes, the tube need not be contracted, and this barometer will then be found to be a very perfect instrument. I saw one at the Kew Observatory nearly two years ago, which was made by Mr. Adie; and I have been informed that M. Leverrier has recently adopted this method of construction for the barometers used at telegraph stations in France. The getting rid of the trouble of adjusting the mercury in the cistern to the zero point previous to each reading, and the very moderate price for which this barometer has been made, are recommendations so strong that they will probably soon lead to its general adoption.

The method of testing thermometers is so simple as scarcely to require an explanation. For the freezing point, the bulbs, and a considerable portion of the tubes of the thermometers, are immersed in pounded ice. For the higher temperatures, the thermometers are placed in a cylindrical glass vessel containing water of the required heat, and the scales of the thermometers intended to be tested, together with the standard with which they are to be compared, are read through the glass. In this way the scale readings may be tested at any required degree of temperature, and our usual practice is to test them at every ten degrees from 32° to 92° of Fahrenheit. For this range of 60° the makers who supply the Board of Trade are limited to 0·6 of a degree as the maximum error of scale reading; and so accurately are these thermometers made, that it has not been found necessary to reject more than a very few of them. This is a proof of the practicability of making cheap thermometers, adapted for all the requirements of the mariner, nearly as perfect as it is possible to read them.

With some opticians it is not unusual, when captains break their thermometers, to apply new tubes to the old scales; and we occasionally meet with thermometers which require corrections of four or five degrees and upwards, with contrary signs at the two extremes of temperature in which we test them. It can scarcely be supposed that the captain of any ship would trouble himself to take observations with such a thermometer if he knew its indications to be so erroneous; and we hope that the means now

afforded to the mariner to test his instruments, will soon lead to an improvement in their construction.

I do not know anything which is more likely to lead to a great improvement in navigation, than the encouragement which is now given by the Board of Trade to the intelligent mariner to keep, in a systematic manner, a record of the various meteorological and astronomical phenomena observed at sea. The captain who avails himself of every opportunity to ascertain the position of his ship and the error of his compass by astronomical observations, and who keeps his meteorological record in such a way as to enable him to trace those changes by which he is warned of the approach of an iceberg, or of a coming storm, must, on the average, conduct his ship from port to port quicker and in greater safety than he would do were he to neglect such observations.

ON THE CHARACTER OF HAMLET.

By the Rev. Arthur Ramsay, M.A.

(Read 10th April, 1856.)

Of all the wonderful creations of our many-sided national dramatist, none has provoked greater discussion, or occupied the attention of more learned men, than the play of Hamlet. Goethe, Coleridge, Tieck, and Schlegel—the two first, themselves poets of the very highest order—have brought kindred genius and rare talent to the examination and criticism of this inimitable production. And still we feel that the character of Hamlet is in many points yet a mystery; that the lights and shades which an enlightened criticism may throw upon it, the latent beauties of delineation which a reverential study may detect, and the different phases which a keen and far-sighted research may bring into view, are absolutely inexhaustible. The reality of Hamlet's madness, the genuineness of his love for Ophelia, his course of conduct toward the queen his mother, and the king his uncle, the curious combination of indecision of purpose in his resolutions, with a certain promptitude of action in his deeds when necessitated to act on the spur of the moment; all these, and much else in this play, are points about which the readers of Shakspere have ever formed, and will ever form, various and conflicting opinions, and entertain a difference of idea, extending even to the notions which they form when speculating on the personal appearance of the hero.

This uncertainty of motive, and apparent fickleness of design, by no means confined to the character of Hamlet, tend to thicken the atmosphere of mystery which envelopes the whole play. In mystery it begins and in mystery it ends. The mystery of humanity in the character of Hamlet, the mystery of existence speculated upon in so many of his speeches, the mystery of the world of spirits, the mystery of death, and the mystery of destiny, are all brought before us. And this mystery it is which attracts us so strangely towards this play, just as we are excited and attracted by the mysterious and the inscrutable in a character of real life.

The supremacy of chance, and the uncertainty of human plans and

actions, reign relentless throughout the whole play, and pervade every part of it; until, in a spirit of the most sublime irony, the poet causes the final catastrophe to result from an accident, in spite of all the counsels and determinations of the several actors, setting forth to us the great truth that

> "Our wills and fates do so contrary run,
> That our devices still are overthrown."

I have already adverted to the criticisms of our great poet-philosopher Coleridge. Of these critical hints (unfortunately they are nothing more) I have largely availed myself; and I must here express my agreement with the opinion of that prince of critics, that the character of Hamlet owes itself to Shakspere's deep and accurate acquaintance with the science of mental philosophy. Those, doubtless, who have been accustomed to hear Shakspere spoken of as a mere "irregular genius," or to think of him as described by Milton—

> "*Fancy's* child,
> Warbling his native wood notes wild,"

may be astonished to hear him spoken of as a great moral and mental philosopher. Medical and other writers have indeed borne testimony to his accurate observation of the *external* world; but we are less inclined to think of him as equally a deep and correct observer of the *inward* world. He was, however, so to speak, subjective as well as objective; and thus moral and metaphysical truths, of the very deepest importance, abound in his pages.* True he might not, perhaps, have an external knowledge of other men's *systems* gathered from the study of their works; but he was a philosopher for all that. His was essentially a philosophic mind—a mind which could *pass out of itself*; and there is a great difference between having an external knowledge of philosophy, and being *inwardly* a philosopher. Likely enough Shakspere had never read Plato; but still he was in many points an admirable Platonist: like Plato he was a philosopher of Ideas; like Plato's, his philosophy was the "interpreting of appearances," the wish to be everywhere at home, the undressing of the soul; his pre-eminent excellence was that he could lay aside self, transplant himself into the minds of his fellow men, and be perfectly at home

* The distinction between Reason and Understanding, (so constantly forgotten by writers of the last century, and of late years revived by Coleridge,) is constantly found in Shakspere. In this very play he distinguishes between the *capability* of the *discursive* faculty, the "large *discourse*, looking before and after," and the *power* of the *intuitive* faculty, or "*god-like reason*;" the former being merely concerned about *conceptions*, the latter about *ideas*.

there, laying bare their very souls, and not only seeing, but expressing their thoughts in language, every word of which is itself a thought and a picture. He could pass out of his own into their position; originate, think, and express the thoughts and reflections natural to them in that position. Shakspere, in fact, differed from other men, principally in having more *humanity* than they had. He had, as it were, a family likeness to every other man, and thus he deserves the epithet of *myrionous*,* the "myriad-minded one," which Coleridge has transferred to him; and the title of "the many-sided," which Carlyle has applied to Goethe, might, with much more truth and fitness, be attached to the name of Shakspere. But Shakspere was not only an observer of other men's characters, he was a close and deep observer of the law of his own mind; and it is to this habit of deep self-observation that we owe the character of Hamlet. Coleridge has truly remarked that one of Shakspere's modes of creating character is to conceive any one intellectual faculty in a morbid excess, and then mentally to place himself with the same tendencies in the same position. And this he has done in his creation of Hamlet. In Hamlet he has embodied his idea of one in whom the Reason predominates in an inordinate and unhealthy degree over the Will, or acting principle; and this character he has placed in a situation of overwhelming exigencies—a situation in which promptitude, decision, and self-reliance, are absolutely indispensable. It is not, however, the incapability of action which Shakspere portrays in Hamlet, for when the latter does act, he acts with energy, decision, skill, and success—ever equal to the call of the moment. But in him the abstract intellect is too strong for the active impulse. Ever theorizing and generalizing on the things and circumstances around him, looking into, dissecting, and anatomizing his own thoughts, and pursuing, so to speak, the somewhat unprofitable luxury of "thinking upon thinking," he remodels and renews his resolutions, and the more he does so, the longer he defers the execution of those resolutions, until, in the anguish of doubt and indecision, he breaks out into the passionate exclamation,

"O what a rogue and peasant slave am I."

And yet how far is Shakspere's Hamlet from exciting in us any of those feelings of pity and contempt with which we usually regard the indecisive and inactive. On the contrary we cannot but agree with Ophelia's

* See Coleridge, "Biographia Literaria," vol. ii., page 13.

beautiful but melancholy eulogium of him. His is indeed a "noble mind"; he is a prince with the feeling of the good and the beautiful, dignified by the consciousness of high birth; he is a gentleman, pleasing, pliant, and courteous;* he is a man of genius, and as such he possesses that craving after the unseen, the indefinite, and the unknown, which most easily besets men of genius, and that aversion to action which constantly prevails among such as have a world in themselves. But Hamlet is not only a prince, a scholar, and a gentleman—he is more than this; he is a philosopher—not one indeed of the very highest class, but still a philosopher—accustomed to raise his mind from the things of sense around him, to the grand ideas *within* him and *above* him; one who "could be bounded in a nut shell, and count himself king of infinite space"; so unworldly that to him

"Weary, stale, flat, and unprofitable,
Seem all the uses of this world;"

ever (and herein he is most of all a philosopher †) contemplating and reflecting on the law of his own mind, seeing "into the *life* of things," constantly generalizing, till even when making a resolution

"To wipe away all trivial fond records,"

he sets down "on his tables" a general observation; and thus his

"Native hue of resolution
Is sicklied o'er with the pale cast of thought,"

and in spite of all his reasoning, all his plans and purposes, the consummation takes place just the same as it would have done without these. Into the Philosophy of Hamlet we have not now time to enquire; it only needs a careful examination, however, to perceive that this is quite as wonderful as his character.

In contradistinction to the glorious *imagination* and mysteriously deep philosophy of Hamlet, stands the sober common sense of Horatio, by its very contrast giving greater prominence to, and heightening the effect of the character of Hamlet. Horatio was peculiarly a healthy-minded man. If Hamlet's mind was cast in the Platonic mould, Horatio was eminently an Aristotelian, or rather, perhaps, as he says of himself,

"More an antique Roman than a Dane."

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* In the scene with Osric, (Act v. Sc. 2,) Hamlet's gentlemanly manners, as well as the superior grandeur of his philosophy, shine conspicuous, the lofty condescension of his conscious superiority, and his good natured playfulness forming a fine contrast to Horatio's impatient and almost pettish remarks to that courtier.

† Novalis says well on this point, "Die Philosophie ist eine ideale-selbster-fundere methode das innere zu beobachten."

His philosophy, such as it is, begins and ends in *doubt*. Its materialistic and sensualistic character is brought forward in the very first scene of the play, where he calls that mysterious appearance, which at the midnight hour is occupying the thoughts and attention of the officers on the platform, "this thing"; and says of it, "tush, tush, 't will not appear." In fact the coldness and the oppressive stillness of the night—"not a mouse stirring"—the glimpses of the moon above, the time-worn towers behind, the hollow murmur of the sea beneath, the mixed feeling of awe and alarm in the officers on the watch, and the strongly contrasted contempt of Horatio for the supernatural, are the most remarkable points in this opening scene, so artistically introduced, and so well fitted to prepare us for the appearance of the ghost of Hamlet's father, and the mysterious character of the whole play. Marcellus remarks of him,

> "Horatio says, 't is but our fantasy;
> And *will not let belief take hold of him*,
> Touching this dreaded sight twice seen of us;"

and he himself afterwards says,

> "I might not this believe
> Without the *sensible* and true avouch
> Of *mine own eyes*."

And when this unbelief of his has proved to be foolishness, he is full of the philosophy of the schools, and sets to work to resolve the phenomenon into an historical prodigy,

> "A mote it is to trouble the mind's eye."

In the midst of his theorizing the ghost re-enters, when he fancies it must either be an illusion, or else have flesh and blood;

> "Stay *illusion!*
> If thou hast any sound, or use of voice,
> Speak to me:"

and when it answers not, he is for assuring himself, by means of his hands, of the reality of the prodigy, bidding Marcellus stop it, and strike at it, not seeing that he does it,

> "Wrong being so majestical,
> To offer it the show of violence."

That which is beyond the comprehension of the sensuous Understanding, Horatio is for rejecting as "wondrous strange," so that Hamlet takes occasion to tell him,

> "There are more things in heaven and earth, Horatio,
> Than are dreamt of in *your* philosophy."

The contrast between the imaginative spirit of Hamlet and the practical

understanding of Horatio, runs through the whole play. For imagination to revel in philosophizing on the littleness to which all the sensible greatness of man may be reduced, and to trace "to what base uses we may return," Horatio thinks "were to consider too curiously." Some of Hamlet's sublime speculations he reduces to

"Custom hath made it in him a property of easiness;"

others he takes no interest in, merely answering with "It might, my lord," "Ay, my lord." In the church-yard he obviously dislikes the whole scene by which he is surrounded. To Hamlet's question "Is not parchment made of sheep-skins," he replies, with the most technical gravity, "Ay, my lord, and of calves-skins too." This question he can resolve, but it is plain that Hamlet's beautiful address to the skull of Yorick makes little or no impression on his mind. And yet, though in Horatio the Understanding does predominate over the Reason, still it has not wholly extinguished the latter. Nay, it would seem that his sensualistic philosophy was in a great measure learnt in the schools, and was, perhaps, rather the *external result* of his education, than the *internal law* of his own mind; as it is, every now and then he gives utterance to a note-worthy truth, of a nature not to be expected from him. We may also observe that Bernardo's opening salutation to him,

"Welcome, Horatio; welcome, good Marcellus,"

shew him to have been held in some degree of respect; and most true to nature (as when is he not?) is Shakspere, when he makes Hamlet love, value, and respect Horatio, ever appealing to his judgment, as one of the

"blessed are those
Whose blood and judgment are so well comingled,
That they are not a pipe for fortune's finger
To sound what stop she pleases."

The more in keeping with real life is it that Hamlet should thus lean on his friend, since that friend is so different from himself; his fine, imaginative, metaphysical, but unpractical spirit naturally clings to the strong, coarse, but sober and practical understanding of Horatio. Many points, too, they have in common: Hamlet is a "noble heart," a good lover, ready to wear his friend "In my heart's core, yea, in my heart of hearts;" "Most generous and free from all contriving," he "will not" "peruse the foils," ready to acknowledge ungrudgingly and openly, as he does in the case of Laertes,

"I have done you wrong."

Horatio, too, is a good friend, honest, and sincere, as well as sensible and

judicious, and moreover, like Hamlet, a scholar and a gentleman.

A great deal lower than these two comes Polonius. Some critics (Tieck among the number) have fancied Polonius to be Shakspere's representation of an able and experienced statesman; others, on the contrary, suppose him to be one in whom the body has outlived the mind, or perhaps, to speak more accurately, the memory has outlived the reason. And in this latter view there is doubtless a considerable degree of truth. The sentiments to which Polonius gives utterance are, indeed, but the rags and shreds of his former wisdom: still even from these we may judge what was the tone of thought and feeling of his better days. From these we may well conceive Polonius to be, in part, Shakspere's anticipative embodiment of the petty philosopher of a later age. He is a philosopher of the Understanding, and of the Understanding only. If Hamlet be a Platonist, and Horatio an Aristotelian, then Polonius is (of course I speak anticipatively) a disciple of Locke; his wisdom, such as it is, is founded wholly on "observation and experience"; he is "full of wise saws and modern instances"; he is one of those whom Coleridge* has well described as being like "a Cyclops, with one eye only, and that in the back of his head." Polonius is a maxim-monger, and the universal character of his maxims is selfishness—selfishness and a mere seeming knowledge of the *outward* part of the world—a knowledge of the superficies of man, acquired by worldly experience, combined with a total ignorance of all that lies beneath this surface, of every thing good, noble, and beautiful. Thus his precepts are exactly those of Lord Chesterfield and of Rochefoucault;† characterised by a morbid distrust of his fellow-men, arising from that incredulity which is, after all, but credulity, saying 'No' instead of 'Yes,' and nodding from behind instead of from before, and is generally allied to extreme credulousness of aught which helps forward the favourite theory. These traits, as wells as an enlightened selfishness in the reasons on which he founds his maxims, run through his precepts, all of which relate to mere external matters.‡ Their author is one of those who begins from

* See Coleridge, "Table Talk," page 37.

† To many of Polonius' precepts, such as "Take each man's censure, but reserve thy judgment," "Neither a borrower nor a lender be," "Give thy thoughts no tongue," we may find exact parallels in Rochefoucault's "Maxims."

‡ We must make one exception, namely, that noble piece of advice which closes the address to Laertes,

> "To thine own self be true;
> And it must follow, as the night the day,
> Thou canst not then be false to any man."

without, but never proceeds inward; his soul is a slave to the outward, and he knows not that "he who would ascend upward must retire inward." Polonius, moreover, is one of those modern philosophers who believe in the omnipotence of accomplishments, and thus sends his son, at an early age, into loose and exciting society, to become initiated in those dissipations which a certain class of moralists, or rather anti-moralists, have asserted to be a natural preparative for entering upon an active life—a kind of mud bath into which the youth is, as it were, necessitated to plung before he is privileged to put on the toga of manhood; and he not only sends his son abroad to shew

> "How much a fool that has been sent to roam
> Excels a fool that has been kept at home,"

but he institutes a notable system of espionage over him, and even instructs his servant to speak of him as a "perfect gentleman," a dashing young fellow, an adept in swearing, gaming, drinking, and every species of vice at all tolerated by society, vices which that servant himself considers to imply dishonour. Mark, too, his metaphors, all taken from money-matters, his words with nothing in them, his circuitous craftiness, his inflated self-importance, his ignorance of his own ignorance, and of everything at all above himself, his positiveness, and his repeated assertions that all opinions but his own are *ipse dixitisms;* his perpetual and ill-timed boastings of his own superior acuteness and knowledge of the world,

> "As I perceived it, I must tell you that,
> Before my daughter told me."

> "Hath there been such a time, (I'd fain know that,)
> That I have positively said, 'T is so,'
> When it proved otherwise.

Besides these there are several other noticeable points in the character of Polonius: his suspicious disposition; his fondness for petty intrigue, without which he can do nothing, and with which he goes blundering on, until he is killed in a closet intrigue at last; the *arrangement* of *talent* in his speeches, as contradistinguished from the *method* of *genius** which (as Coleridge has well shewn in the concluding Essays of the "Friend") uniformly pervades every speech of Hamlet.

While Horatio commands *respect* and esteem even from one so differently constituted as Hamlet, the old expediency statesman almost moves the latter to

> "That scorn which wisdom holds unlawful ever."

* Compare Coleridge's "Friend," vol. iii. Essay iv. p. 113, and Essay i. p. 71, with Novalis' remarks, "In der *Methode*, der Regularisation des Genius."

Polonius, on the other hand, with admirable self-complacency—Polonius, the philosopher of maxims—consoles himself with the notion that Hamlet, the philosopher of ideas, is mad. Shakspere thus agrees with Cervantes in making the philosopher of the *Pure Reason* misunderstood, or rather not understood at all, by the man of the Understanding. Sancho Panza can no more appreciate or understand Don Quixote's motives and character, than Polonius can Hamlet's.* One proof that this view of the character of Polonius is in the main correct, we have in the fact that his maxims, disjointed from the character itself, are so often quoted with approbation, as the veritable wisdom which Shakspere was commissioned to preach to his fellow-men, as if Shakspere had been a mere precept menti-facturer, teaching no higher philosophy than the way to be "healthy, wealthy, and wise," and to pass through the world with some five or six "golden rules," suitable to all occasions, and sufficient for all purposes.

We must next examine the result of Polonius' teaching, and see what he to whom his maxims were given, and who endeavoured to practise them, really was. Laertes became what his father wished and intended him to be, a finished gentleman, a perfect man of the world; in the poet's own words—

> "An absolute gentleman, full of most excellent differences,
> of very soft society, and great showing: indeed, to speak
> feelingly of him, he is the card or calendar of *gentry*."

While Hamlet is at once ready to forgive and forget, nay, to make the first advance towards reconciliation, with

> "I am very sorry, good Horatio,
> That to Laertes I forgot myself,"

Laertes stands on minute points of honour, and

> "Will no reconcilement,
> 'Till by some elder masters of known honour
> I have a voice and precedent of peace."

Bishop Warburton and others speak of Laertes as a "good character." What these gentlemen's notions of 'goodness' were they have not explained; unless they were peculiarly eccentric, it is somewhat difficult to conceive that they could have read the play with sufficient attention to

* Of course I do not mean to institute any comparison between the character of Don Quixote and that of Hamlet, further than that in each the Imagination has grown in such an undue proportion as to overbalance all the other mental faculties. Hamlet is an example of a fine Reason and a weak Will; Don Quixote of a fine Reason and a strong Will, but in consequence of a deficiency of the Understanding, or substantiative power, the Will almost always obeys the Reason wrongly; both are wanting in sense—the conservative power, so to speak—in the intellectual republic.

observe, that before the fatal encounter between Hamlet and himself, while the unsuspicious Hamlet presumes at once

"These foils have all a length,"

Laertes not only arranges beforehand, in compliance with the king's suggestion, to have an "unbated sword," but of himself proposes to steep the point of that weapon in a deadly poison;

"*For the purpose* I 'll anoint my sword,"

is his own proposal.

Thus, then, in this one play we have three grand species of the philosophic character* most ably and minutely drawn, "sounded from the lowest note to the top of the compass," and there is "much music, excellent voice," in the Memnon-like frame of at least one of these. It does not lie in our way minutely to examine the other characters of the play, less directly contrasted to that of Hamlet; but we may observe much that is beautiful and wonderful in most of them—the gentle and unselfish Ophelia; the admirable delineation of the fawning courtiers Rosencrantz and Guildenstern, and the marvellous judgment with which, as Goethe† has well remarked, Shakspere has introduced two of these; the grand struggle between the Reason and the Will in the king's attempt to pray; his dignity in the scene with Laertes;‡ and above all, the sublime moral which teaches us how weak are all our purposes and resolves, how futile our plans and designs, how uncertain our hopes and objects; how all these must yield, and become as nothing, before that superior and mysterious power which works its will in spite of our impotent struggles;

"There is a Divinity that shapes our ends,
Rough-hew them how we will." "*That is most certain.*"

Before I close, it may be as well to say a few words about two obscure and much disputed points, (1) the real or pretended madness of Hamlet, and (2) his love for and treatment of Ophelia. And the two we shall find

* In Hamlet we have genius, with its allies reason, imagination, and humour: in Horatio, talent, accompanied by understanding and sense: in Polonius mere cleverness, with the talent of adapting and retailing, though not of originating, ideas.

† "What these two persons are and do it is impossible to represent by one. In such small matters we discover Shakspere's greatness. These soft approaches, this smirking and bowing, this assenting, wheedling, flattering, this whisking agility, this wagging of the tail, this allness and emptiness, this ineptitude and insipidity—how can they be expressed by a single man? There ought to be at least a dozen of these people, if they could be had, for it is only in society that they are anything; they are society itself: and Shakspere showed no little wisdom and discernment in bringing in a pair of them." *Goethe's 'Wilhelm Meister.'*

‡ We may compare (parva componere magnis) the dignity of Charles Edward in the closing scenes of "Redgauntlet."

are, in a great measure, connected. First, with regard to his madness. We have already seen that in Hamlet's mental constitution there is an undue predominance of the imaginative and reasoning powers. This original fault of nature is aggravated by the circumstances in which he is placed. By the awful apparition of his father's ghost, and by the discovery of his mother's guilt, his belief in the stability of the moral world is unhinged; his mind has, so to speak, got a twist, and lost whatever healthiness it might before have had. This and the half earnestness in Hamlet's character in part account for his half assumed madness. Like many another man, Hamlet partially assumes that state to which he is nearest,* and pretends to act when he is very near being what he acts. In a spirit of bitter irony, he in some degree countenances the idea of his own madness, although when about to address himself to an earnest and difficult task, he offers to expose himself to a test, which modern physicians have affirmed to be correct:

> "Bring me to the test,
> And I the matter will reword, which madness
> Would gambol from.

The late Sir Henry Halford, † in an interesting essay on tests of insanity, gives some curious instances and illustrations of the correctness of the proposed test. Perhaps, on the whole, while among persons by whom he was so little understood, Hamlet's feeling may have been something like that of Brothers, the prophet, who, when visited in Bedlam by a friend, and asked how he came to be there, replied—"the world and I had a slight difference of opinion; the world thought I was mad, and I thought the world was mad; the world *outvoted* me, and here I am."

With regard to Hamlet's love for Ophelia, we may observe that, except her artlessness and innocence, there was little in Ophelia to make her the engrossing object of passion to so majestic a spirit as Hamlet's. His love is doubtless sincere, but it is not an absorbing passion; ‡ and thus the moment his soul is sickened by the awful glance which he has obtained

* Insanity, i.e. unhealthiness, is perhaps a better term to apply to Hamlet's mental derangement than madness.

† See Sir Henry Halford's Essay on "Popular and Classical Illustrations of Insanity," "Essays and Orations," p. 55.

‡ I am aware that this view of the matter is combated in "The Characteristics of Women," by Mrs. Jameson, who maintains that Hamlet uniformily regards Ophelia with all that deep delight, with which a superior nature ever contemplates the goodness which is perfect in itself, yet unconscious of itself,—that Ophelia knew that Hamlet loved her, and Hamlet knew that Ophelia knew it, and when uttering his bitter words, was well aware that no behaviour of his could make Ophelia doubt his love.

into the depths of female hollowness and iniquity, love falls into the back ground, and is at once ranked among those "trivial fond records" which he has sworn to erase from his heart and brain, and when he perceives that Ophelia is being used as a decoy, and is acting a part not her own, he can address her in that wild ironic bitterness of tone, which excites our wonder and astonishment.

Much of what has been said may appear somewhat extravagant and far fetched, especially to those who have been taught to look upon Shakspere as a mere beautiful "lusus naturæ"—a wild and extravagant genius, deficient in learning and culture, who neither meant nor understood a tithe of the deep and beautiful ideas which critics fancy that they can discover in his wondrous soul-creations. When studied as he ought to be studied, in a humble and loving spirit, Shakspere can only appear such to ordinary and infra-ordinary minds. And as for his not meaning all the beautiful things that are to be found in his words, it is one of the surest marks of a true poet that the outpourings of his genius contain many hidden beauties, variously unfolding themselves to different orders of character; the greater the poet, the more living and expansive are his words, and the more truths they contain for the larger number of men of every variety of age, and every mould of mind,—truths always rising up like the waters of a spring, ever fresh and ever inexhaustible. Thus the words of a true poet, like Shakspere, will rarely, if ever, be comprehended in their full significance, by any one single individual.

But apart from this, somewhat of the mystery in the play of Hamlet may arise from the circumstance, that in common with the highest painters and sculptors,* even Shakspeare has not wholly expressed his idea. Like the Gothic architecture, his works must remain in a great measure ideal, pointing even higher than they reach, since any one of his dramas, taken in its *oneness* and *entirety*, conveys to the mind far more than lies on the surface of the mere words themselves.

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* Compare Thorwaldsen's remark: "My genius is decaying. Till now my idea has always been far beyond what I could execute. But it is no longer so. I shall never have a great idea again." Quoted by Hare, "Guesses at Truth," first series, p. 83.

REFERENCE.

No 1.	THE "PLUMP" IN WHICH THE ROMAN REMAINS WERE FOUND.
2	Mr MAITLAND'S GARDEN, IN WHICH REMAINS WERE FOUND.
3.4.5.	THE THREE TERRACES.
6	THE ZIG-ZAG INDENTATION
7	LARGE GRAVEL BED AND FORD
8	SUPPOSED ROMAN ROAD
9	Mr CALVERT'S WEAVING SHED, IN WHICH THE WORKMEN FOUND REMAINS OF ROAD
10	OLD COURSE OF THE DARWEN, ACCORDING TO ROBERT PORTER'S MAP, PUBLISD IN 1738
11	PRESENT COURSE OF THE DARWEN.
12	THE RIBBLE
13	NEW ROADS
14	NEW BRIDGES
15	OLD VILLAGE OF WALTON-LE-DALE.

———— THE SOLID LINES ARE FROM ROBERT PORTER'S MAP.

– – – – – THE BROKEN LINES INDICATE SUCH MODERN ADDITIONS AS ARE NECESSA TO THE PRESENT INQUIRY.

..... THE DOTTED LINES INDICATE THE ROMAN REMAINS.

ON THE ROMAN REMAINS RECENTLY DISCOVERED AT WALTON-LE-DALE, NEAR PRESTON.

By Charles Hardwick, Esq.

(Read 3rd April, 1856.)

Notwithstanding the destructive influence of time, of agricultural improvement, and of wars engendered by personal cupidity, "domestic treason or foreign malice," remains of several Roman roads and stations may yet be traced in various parts of Britain. As may be anticipated, however, from the imperfect character of the few ancient records which have descended to us, considerable difference of opinion has been expressed by antiquaries respecting the identity of existing localities with those of the Roman topography.

In this respect Lancashire appears to be rather more unfortunate than many other portions of the island of Britain. The venerable Camden expresses a fear that he would "give little satisfaction either to himself or his readers" when he enters upon the consideration of the archæological remains relating to this county. Although much has been discovered and written since his time, the subject still remains enveloped in considerable obscurity; the most eminent modern antiquaries by no means agreeing even in the general outline. Every new disclosure of remains indicating Roman occupation must therefore be regarded as an event of considerable interest. I take the present opportunity of acknowledging my obligations to this Society during my recent investigation of the site of the Roman station at Walton-le-dale; not merely for the valuable information contained in the published volumes, but also for the confidence and enthusiasm which the example of several of its members induced, and without which, perhaps, the first indications might have been passed over as relatively unimportant.

The Roman remains at Walton were brought to light, like many others, by fortuitous circumstances. During the past year I have been occupied in collecting materials for a "History of Preston and the neighbourhood."

I was aware of the existence of a tradition which identified a mound planted with trees, and known by the name of the "Plump," with the burial ground of "Scotch warriors" slain in Cromwell's victory over the Duke of Hamilton, in 1648. I therefore visited the spot several times in June last, for the purpose of examining its structure, and ascertaining whether or not existing remains countenanced the tradition. Some workmen, employed by the highway surveyor, had commenced digging for stones and gravel. This fortunately afforded an excellent opportunity for a minute inspection. The labourers, being resident in the neighbourhood, had heard of the tradition, and fully expected to meet with some memorials of the battle. During the absence of the excavators, I picked up a piece of metal, which had evidently formed part of some manufactured article. It seemed too thin to be a fragment of a skull-cap, or a piece of plate armour. It however distinctly presented an indentation from the blow of a pointed instrument, and there were some dark red stains upon it. The metal itself appears to be a mixture of tin and lead. This served to stimulate me to further investigation. Three brass coins were next found by the workmen, two of which were illegible from corrosion; but the other was obviously Roman. This coin has since been pronounced to be a first brass of Domitian. The labourers thought it a "Scotch penny," from the imperfect figure on the reverse bearing some resemblance to a kilted Highlander. Thus whilst searching for remains of the Commonwealth period, proofs of Roman occupation were disclosed.

Remembering the injunction of Mr. Robson,* I immediately instituted a stricter search. Specimens of Roman pottery were soon found in abundance, when the attention of the workmen had been directed to its peculiar character and importance. A large quantity of earthenware, and other remains, were taken from their place of deposit by myself and several friends to whom I communicated the discovery. During *this* exploration, an area of nearly one hundred superficial yards was excavated to a depth of about three feet. In the original soil (or "sea sludge," as the labourers termed it,) a foundation wall, about eight yards long, eighteen inches broad, and nearly a foot in depth, was discovered. It is formed of irregularly shaped, but perfectly adjusted fragments of the red-sandstone rock of the neighbourhood, which, from having been buried so long in the earth, has

* Transactions of the Historic Society, vol. iii. p. 75.

become partially disintegrated. The Romans first taught the British people the use of mortar; and as no mortar or other cement had been employed in the construction of this foundation wall, the presumption is that it was the work of the original inhabitants. Above this was spread a layer of large boulders, mixed with *glareæ*, or gravel, in and upon the surface of which the Roman remains were discovered. This stratum was about a foot in thickness, and, from the first, was pronounced by the workmen, who were accustomed to dig for road materials, to be of artificial construction. The fact that the red rock foundation wall was discovered *below* the stones and gravel, confirms their opinion. The boulders only extending to a certain distance, the excavators relinquished their labour, and filled up the cavity, or doubtless many other relics of interest might have been discovered, as the mound extends considerably further to the east and north of the site of the excavation. Two, or even three distinct terraces may still be perceived descending towards the Ribble, notwithstanding the garden cultivation to which a great portion of the land has been subjected for some years past. This peculiar formation, Mr. Robson informed me, resembles much the station at Caer-rhun, about five miles beyond Conway. I afterwards discovered, by digging a small hole at the western extremity of the mound, beneath the trees, that the Roman remains extended fifteen yards further in that direction than the original excavation. Mr. Martland, of the Bridge Inn, Walton-le-dale, the tenant of the adjoining land, had previously exposed a large quantity of bright red clay fragments of pottery, &c., considerably to the eastward of the "Plump," but not being aware of their archæological importance, the prettier portions were given to his children, and the remainder re-consigned to the earth. I have, myself, picked up Roman pottery at the eastern extremity of this garden. Thus the extent of the station *already discovered*, from east to west, is about one hundred yards.

Beneath the trees in the "Plump," the vegetable soil and alluvial deposit had accumulated to nearly the depth of two feet above the Roman remains. In the adjoining garden, the gravel and stones are nearer the surface. Many of the latter have been removed during the past and some preceding winters. This portion being the most elevated land in the neighbourhood, has been rarely covered by even the highest floods, and, consequently, but little river *debris* is found upon what I call the third terrace. It is not so,

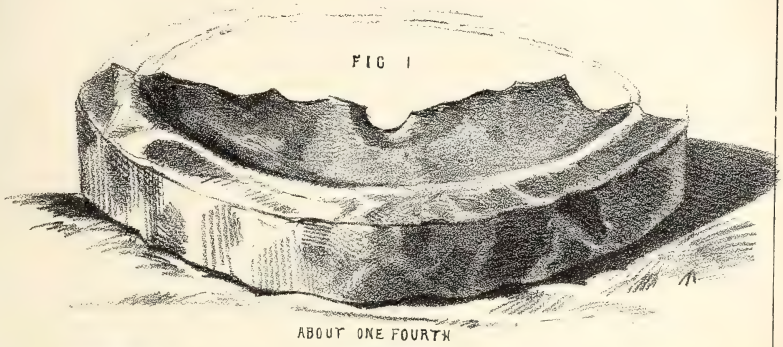
however, with the two lower ones. Here the periodical deposits have formed a considerable depth of very superior soil. Stepping across these terraces from south to north, I found the highest and middle plateau to be each about thirty yards in breadth, and the lowest from fifty to sixty, making the extent of the entire station about one hundred and twenty yards. The terraces are elevated from two to three feet above each other. From the western extremity to what appears to have been the main highway from the south to the ford over the Ribble, the distance is about three hundred yards.

Amongst the remains discovered are four brass coins, besides the one already mentioned, viz., a "second brass," with the head and name of Domitian distinctly legible, and a "first brass," in moderate preservation, which presents the effigy of Antoninus Pius. The others are too much corroded to be clearly deciphered. It is probable, however, from the general form of the head, that one is a Titus Vespasian. Amongst the metallic substances are a small piece of copper, some fragments of thin sheet lead, one shewing indication of fusion like solder, two fragments of Roman pewter vessels, and several large iron nails. (Plate A, fig, 5.) These last are much encrusted with gravel and sand, from the oxidizing of the metal, and the lead is covered with a thick white coating, from a similar cause. A small bronze *fibula*, or toga button (as the fastening is in the centre), bearing marks of elegant and elaborate chasing, and some remains of purple enamel, was likewise picked up. (Figs. 2 and 4, plate A.) Another *fibula*, of totally different form and character, has since been found by Mr. Martland's son, together with a small rod or bar of iron plated with silver. The latter is about three inches and a half long, and one-tenth of an inch in diameter. The *fibula* is of fine brass, ornamented in the centre with a circular figure in bright red enamel, resembling the stone setting of a modern finger ring. (Plate A, figs. 6 and 7.)

Amongst the stone articles are a large portion of an "ass," or lower stone of a quern, or hand corn mill (plate A, fig. 8); several fragments of "riders," or upper quern stones, cut from rock resembling blue lava (plate A, fig. 1), and some remains of circular stones of a similar character, supposed to have been potter's wheels. One small wheel, or spindle head, about an inch and a half in diameter, formed of very fine bluish stone,

PLATE A.

FIG 1



ABOUT ONE FOURTH

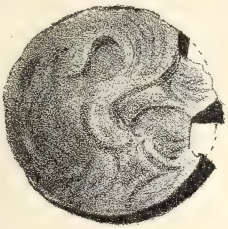


FIG 4.

FIG 3.

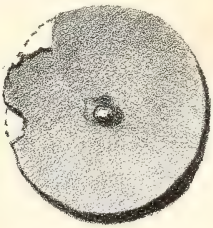


FIG 2.

NEARLY FULL

FIG 5.
ABOUT ONE HALF

FIG 6.

NEARLY FULL

FIG 7.

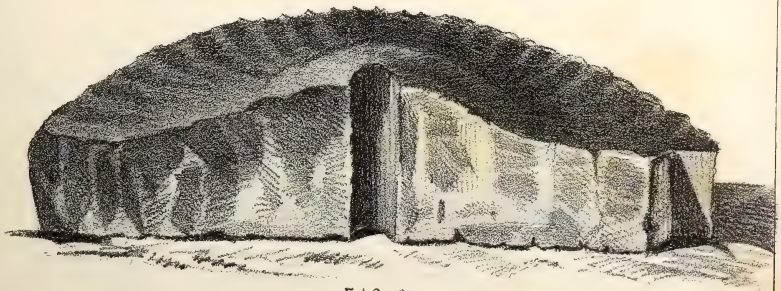


FIG 8.
ABOUT ONE FOURTH

REMAINS FOUND AT WALTON-LE-DALE

PLATE B

FIG 1

FIG 2

FIG 3

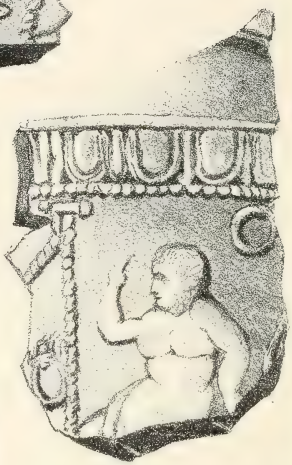


FIG 5

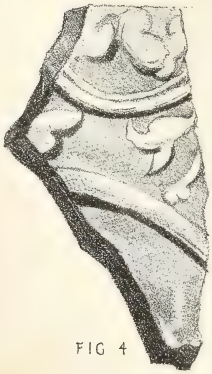


FIG 4

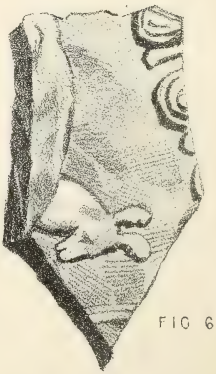


FIG 6

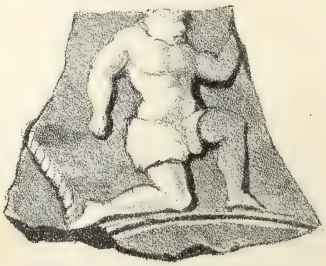


FIG 7
RATHER LESS THAN FULL SIZE

exhibits upon its side marks of friction, apparently produced by rapid revolution. (Plate A, fig. 3.)

The fragments of earthenware are extremely numerous, and appear to have been formed from five or six distinct clays or composition pastes. Some of the pieces of "Roman red lustrous ware" exhibit elegant and well executed figures in relief. Many of the ornamental designs of these fragments are identical with those on specimens figured in the catalogue of the Museum of Practical Geology, found at Roman stations in Britain and on the Continent. (Plate B.) A *relievo* of the Venus de Medici is precisely similar to those upon the beautiful vase, represented at page 62 of the catalogue referred to.

A single fragment presents a good specimen of a peculiar species of earthenware, often discovered in Germany and Britain, in which lines of dots and figures in relief have been added, after the body of the vase had been formed and turned in the lathe. This specimen is unglazed. (Plate C, fig. 1.)

There are many fragments of amphoræ and lesser vessels, of a great variety of form and material. Two necks of vases with single handles, in common red clay, resemble those found at Stockton Heath, and figured at page 33, vol. ii., of the Historic Society's Transactions. (Figs. 2 and 4, plate C.) One large amphora handle exhibits the potter's stamp. From superficial decay, all the letters are not very legible; but it appears to resemble either **PVCRM** or **FVCRN.** (Plate C, fig. 3.) This vase handle has been much injured since I made the drawing. There is an immense number of fragments of a coarse black or bluish ware, of various shapes and sizes. Many have formed low shallow dishes, such as fig. 5, plate C, and appear to have been used for cooking purposes.

Considerable lumps of fine red clay, kneaded into a paste, were likewise met with, as well as a few fragments of Roman tiles and bricks. It is therefore very possible that a brick-kiln, or an establishment for the manufacture of the coarser kinds of pottery, existed at Walton.

Amongst other miscellaneous objects, I took from the surface of the Roman gravel two portions of a horse's jaw. One consisted of the entire half of the lower maxillary bone, but it was in such a decomposed condition, that it broke into fragments on removal. The teeth, however, are quite perfect. The core of a horn of one of the extinct species of oxen, the

Bos longifrons, was likewise found amongst the Roman remains, together with a few bones. Similar horns have been dredged out of the Ribble, as well as skulls and bones of the huge *Bos primigenius* and other extinct animals. The Rev. Mr. Thornber possesses a skull of the *Bos longifrons* which was found in the Roman station at Kirkham. One of the garden labourers states that he came upon some burnt ashes, covered by a vessel of rude pottery, but it was not preserved. I have since learned that other remains supposed to be Roman or British, including bronze celts, spear heads, &c., had been previously found in the neighbourhood.*

The trees on the "Plump" have been cut down during the past winter, and I understand that some of the workmen employed have procured a few more coins.

Notwithstanding the accumulation of alluvial deposit, a broad agger is still traceable from the immense natural gravel bank or ford at the Ribble, towards the present bridge over the Darwen. The workmen employed in the erection of Mr. Calvert's weaving shed, which crosses its line, state that at some distance below the surface, they came upon a compact mass of road material, so hard that a pick-axe could scarcely penetrate it. Near Brownedge Chapel, a little further south, there appears still to exist a large fragment of the Roman highway, now used as a private road, but marked on the ordnance map as "Mainway-gate." On the north bank of the Ribble, opposite the ford, a zigzag indentation in the face of the steep ascent may still be seen. From this point, the road appears to have passed in a straight line over the end of Church Street, near the House of Correction, to Preston Moor. As usual, in the immediate neighbourhood of the town, all remains are lost. The cutting where it passed the Swillbrook, between Mr. Eastham's new mill and Albyn Bank, is, however, distinctly visible. During the construction of the Freehold Park estate in Fulwood, fragments were discovered upon the section allotted to Mr. Brewer. A small portion of the Roman agger may yet be seen on Preston Moor, where the land slopes towards the brook, opposite to Mr. Brewer's plot. This road intersected the one from the "Portus" to Ribchester (the seventh iter of Richard), on the present "Watling-street," at about an equal distance from the "Withy Trees Inn," and Fulwood Barracks. The Rev. John Clay,

* Nearly the entire remains yet found are in the possession of myself and Mr. Alderman Brown, who zealously aided me in the prosecution of my investigations. We purpose presenting the principal objects to a Museum in Preston.

PLATE 6.

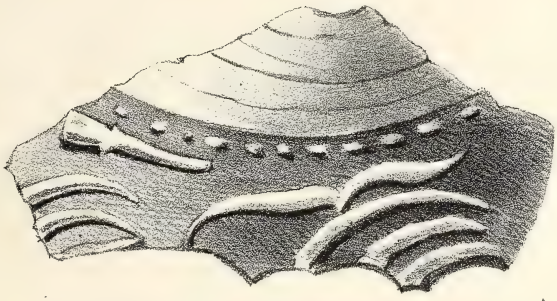


FIG 1
NEARLY FULL

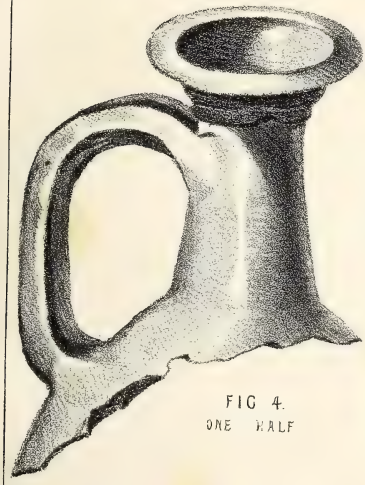


FIG 4.
ONE HALF

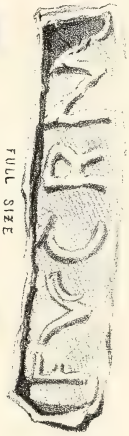


FIG 3

FIG 2
ONE HALF

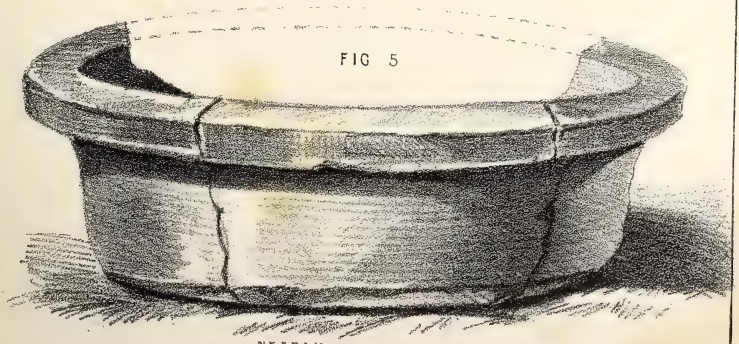


FIG 5
NEARLY ONE HALF

ROMAN POTTERY FOUND AT WALTON-LE-DALE

in one of his interesting lectures on the Ribble, in 1845, gave some particulars respecting the destruction of these roads, which are the more valuable, and the more worthy of preservation, as the progress of modern improvement has nearly obliterated all traces of them. He observed :—

"In the course of our enquiries about the roads, we were fortunate in meeting a fine old man, upwards of ninety years of age, named Richard Dewhurst, living on Cadley-moor, in a cottage in which he, and his father before him, were born. His memory respecting this road seemed very clear. He recollected 'breaking up'—seventy years ago—the gravel of which it was formed, beginning from the Withy Trees, crossing Cadley-moor, and continuing past Mr. Grimshaw's house, in the direction of Cottam Mill. There can be no doubt that this was a portion of the Watling-street; for the old man's memory brings it to Tanteston Hall, where its traces re-appear. Mr. Cartwright and I found faint evidences of it yet remaining near Plungington, and also near the lodge of water belonging to Cadley Mill. Our informant also well remembered that another road, constructed also of similar materials, crossed Preston-moor, and entered the Watling-street. On this road his fellow-workmen, employed in removing the gravel, found some Roman coins. The tradition which had come down to our venerable informant was that these roads stretched across the whole country. The 'one reaching from east sea to west sea; the other from north sea to south sea!' And as to the maker of the roads, tradition further declared that they were all made in one night, by the author of evil!"

I have, myself, heard, from good authority, that another old man, named Thomas Myerscough, who died last year, when upwards of ninety years of age, frequently stated that in his youth he had assisted to cart away the gravel from off Watling-street.

Dr. Kuerden, in his quaint way, describes these roads as they appeared nearly two hundred years ago. The learned doctor laboured hard to prove that Preston occupied the site of the Rigodunum of Ptolemy. He makes Ribchester the Coccium of Antoninus, and Lancaster the Longovicus of the Notitia. Speaking of the road from the coast to Ribchester, he says:—

"This highway, by the country people at this day cald Watling-street, & was well vewed by the learned and incomparable antiquary, William Dugdell, Norroy King of Armes, in his last visitation of the Gentry within

the county of Lancaster, An. Do. 1664, where by him and many other diligent observers there finding a rampire cast up with gravel, & the largeness of the bulk thereof, was judged to be a Roman strata. Besides, it was observed that from this Ribodunum (Preston) to the other Roman garrison, the Longovicus, or Caer werid of the Britons, their Green Citty (Lancaster) there was another lesser strata leading betwixt them, as diuers signes of a like rampire ouer Preston and Fulwood, more towards Garstang by Broughton, are yet conspicuous to the observations of many learned men as well as vulgar people."

Dr. Kuerden likewise mentions that not many years previous to his recording the circumstance, a "Roman Vrne in which was found great store of antient coynes," was dug up in Myerscough Park, near the line of the Roman road. The doctor states that he had himself seen most of these coins which were originally in the possession of "that ingenious gentleman, Edward Townley, Esq., the proprietor and owner of the park of ground where this urne was found."

Some of the elder antiquaries were of opinion that the great Roman road from the south to the north crossed the Ribble by the ford at Penwortham, and passed between Tulketh Hall and the Maudlands. This was first conjectured by Percival, and immediately ridiculed by the Rev. John Whitaker. Yet, with characteristic daring, he afterwards mentions the circumstance as probable, when it did not affect his favourite theory. The notion was followed by Edward Baines and others. The absence of discovered remains at Penwortham and Tulketh, and the presence of them at Walton and elsewhere, now clearly demonstrate the upper ford to be the one where the great road crossed the Ribble. The pretensions of the "square area" at Maudlands (lately destroyed) to Roman construction have been fully exploded.* It was, doubtless, an outpost in connection with the works erected by Col. Rosworm, the celebrated German engineer, after the capture of Preston by the parliamentary forces under Major-Gen. Seaton, on the 9th of February, 1643. † The town was re-captured, by the

* It contained a brick chamber, about six feet deep, and sufficiently broad to permit the descent of one of the workmen. This is supposed to have been constructed for a powder magazine. Some rude oaken staves were found in the ditch. These appeared to have formed part of a railing or palisade. The discovery in the mound of fragments of clay smoking pipes demonstrated its relatively modern construction.

† See Rosworm's pamphlet in "Civil War Tracts," published by the Chetham Society.

Earl of Derby, on the 21st of the following month, and the defences destroyed. Baines confounds Maudlands with Tulketh, and hence the blunder. West, the author of the "*Antiquities of Furness*," speaks, in 1774, of what he fancied to have been a Roman outpost; but his mound and ditch were situated at the head of the high promontory at Ashton, to the "SOUTH WEST OF TULKETH HALL."* A few months ago this mound was levelled; I examined it several times, but discovered no Roman remains. The ditch was evidently, to some extent, an artificial work. The locality may have been used by the Romans, or some of their successors, as an outpost, as it commands a magnificent prospect of the entire estuary, and a considerable portion of the valley to the eastward. Beneath the roots of the grass on the outside of the ditch, fragments of building materials were visible, probably the remains of the ruins described by West as existing in his day, and which had been occupied by the monks under Evanus, during the erection of Furness Abbey. The Domesday record testifies to a Saxon castle on the opposite headland at Penwortham. The site is termed "Castle Hill" to this day.

The discovery of a station at Walton is an event of great importance with reference to the determination of the route of the 10th iter of Antoninus. The recent discoveries in South Lancashire and Cheshire had shaken the hypothesis of the two Whitakers and others, that the iter traversed the county by Manchester and Ribchester. It only required proofs of Roman occupation near Preston to confirm the theory propounded by Mr. Robson, that it passed through Warrington and Lancaster. These are now found. Had the station been situated on the north instead of the south side of Preston, as Mr. Robson anticipated, the result would have been perfectly satisfactory, and the figures of Antoninus have required no emendation.† I may further add, that travelling in a direct line from Lancaster, by Cartmel, to near the head of Windermere Lake, where a Roman

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* The "Maudlands" is to the east of Tulketh Hall. On the ordnance map, the site of the temporary "monastry" is marked nearer to the present Tulketh Hall than the mound alluded to. Both are now totally erased.

† Mr. Robson expected the remains of a *post* station, at least, might be found near the crossing of the Roman roads on Fulwood Moor. This is about two miles to the north of Walton, and agrees with the figures in the iter. This circumstance, together with the belief that Ribchester had been a seaport during the period of the Roman occupation, may, perhaps, account for the indifference with which the mound at Walton, situated amongst the alluvial soil of the valley, has hitherto been regarded by local antiquarians.

camp is marked by West, we get very nearly the distance of the next station from the one named Bremetonacis, viz.: 27 Roman miles. This would answer for Galacum. Doubtless, the three other stations mentioned in the iter may yet be found in Cumberland.

Overborough is on the Lune as well as Lancaster, and may, with equal propriety, claim to be the Ad Alaunam of Richard, or the Longovicus of the Notitia. If Walton be Coccium, the distance will about agree with the figures in one of the copies of Richard, which places Ad Alaunam at 36 miles north of that station, and account for the upper portion of his line presenting no similitude to that of Antonine.* The simple fact that Ptolemy mentions Rigodunum, and that Antonine does not, is, in my opinion, the best possible evidence that the 10th iter of the latter did not pass by that place. This Coccium has been a sad trouble to the Roman topographers of Lancashire. Both Whitakers fused it into Rigodunum by an etymological process. The historian of Manchester informs us that Rigodunum means the "Fortress of Royalty," and that Caer Coccui is the "City of Supremacy." This is, however, a somewhat different interpretation from that of his erudite namesake and successor. With him Rigodunum is Red River, and Coccui, Red Water. Dr. Whitaker assumed that there were *not* two stations on the Ribble. The discovery at Walton solves the problem, and relieves him of the difficulty, the red rock, earth, &c., being characteristic of the Ribble equally near Preston and at Ribchester. The station at Walton likewise completes a double line of forts, within the territories of the Setantii and the Volantii, the first being at the head of the estuaries, which, Tacitus says, Agricola "surveyed himself, and marked out the stations," namely, Stockton Heath on the Mersey, Walton on the Ribble, and Lancaster on the Lune. The second or inland line, higher on the same rivers, were Manchester, Ribchester, and Overborough. As a mere route for either military transit, or for postal communication, the lower, or coast road, from the level character of the country,

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* The route of the former appears to have traversed the eastern portion of Westmoreland, that of the latter "The Lake district," from the mouth of the Solway, or the western extremity of the "Picts' Wall." The roads unite at Lancaster, and are there joined, according to Percival, by a third from Carlisle. The circumstance that Richard has omitted a station at Lancaster is of little consequence. He did not profess to give all, and must have passed over more than one in the same iter, for he makes the distance from Brocavonacis to Ad Alaunam 47 Roman miles.

would naturally be more used than the upper, and hence the reason why it has found a record in the Itinerary.*

The elder Whitaker regarded Coccium as the capital of the Setantian territory. True, the "City of Supremacy" of a tribe of Ancient Britons would present but a poor figure in comparison with even a modern village. If there be any value in this interpretation it can only apply to the settlement of the Aborigines, and not to that of the Romans. Chester appears to have been the most important military station with them in this district, and Ribchester perhaps the next. The low mound at Walton, situated near the junction of the rivers Ribble and Darwen, is a locality very likely to have been selected for a stronghold by the original inhabitants, and its central position amongst the Setantian people is in favour of John Whitaker's supposition. When the surrounding country was clothed with primæval forest, it must have presented the very model of a fastness to the eyes of a people who dwelt for security amongst morasses and dense woods. The broad stream of the Ribble forms a natural fosse on the north and east, whilst the lesser, though not insignificant, Darwen, encloses the site on the west, and partially on the south. The lower lands in the neigbourhood of the rivers, would, at the period referred to, doubtless be sufficiently swampy to accord with the most fastidious Ancient Briton's taste with respect to fortification. A glance at Robert Porter's map, published in 1738, will show that the locality formerly presented even more attractions of this character than at present. The Darwen, in its course from near the site of Walton Hall, towards its junction with the Ribble, made a deep indentation eastward. This formed an additional double moat, and defended the mound on the south. The present straight course of the Darwen is artificial. The remains of the old channel may yet be distinctly seen. The centre of the curve reaches nearly to the weaving shed lately erected by Mr. Calvert. The situation likewise commands the old ford, or "pass of the Ribble." (See Map.) The Roman invaders often selected the sites

* By this route the following places would correspond with the southern portion of the 10th iter of Antonine:—Mediolanum, Middlewich; Condate, Stockton Heath, near Warrington; Mancocunium, Standish; Coccium, Walton, near Preston; and Bremetonacis, Lancaster. This, of course, implies, as suggested by Mr. Robson, that the Mancocunium, with its variation Mancunium of the tenth iter is a distinct place from the Mamucium, or Manutium of the second, the crossing of the two being at Condate.

of the British towns or encampments for their stations, and the discovery of the foundation wall, already alluded to, strengthens the probability that Agricola in this instance merely retained possession of a fortress previously occupied by the discomfited native inhabitants.

Camden placed Coccium at Cockey, on account of the similitude of the names. I have made some enquiry as to existence of any local terms* which may have been corrupted from words indicative of the presence of Roman people at Walton, but have not been very successful. This at best is dangerous ground to tread upon.

Walton-*le-dale* is the present title of the village, the valley being named Cuerdale. The Roman station is only about a mile distant from the spot where the immense Saxon and Danish treasure was found a few years ago. May not Cuerdale be a corruption of Caer-dale? The only relic of any portion of the word Coccium that I have yet met with is more humorous, I fear, than demonstrative of the existence of a remnant of the Roman appellation. However, it is worth notice, and may, perhaps, suggest something. Dr. Kuerden, in his description of Preston, nearly a couple of centuries ago, says, "There is, likewise, below the Churchgate barrs another public footway southward, leading towards the bridge over Rible into London-road; and this passage at its entrance out of town was called Cocker-hole." If we by this are to understand that the road led to Cocker Hall, it would exactly identify Walton with the word Cocker. This footway most probably traversed a portion of the Roman road. On leaving the town it was joined by a track of a similar character, which is thus described by Kuerden:—"Another *remarkable* foot passage toward Rible Bridge is through the churchyard southward, by the publiq schoole and antient place called Chappel of Avenam, over the Swilbrook southward, by west field to the aforesaid Bridge of Rible; and this passage is called the *Stoney gate*, being the greatest foot tract to the Burrough of Preston."

The discovery at Walton throws valuable light upon the much canvassed probability of Ribchester having been a "*sea*port," during the Roman occupation of Britain. The affirmative chiefly rested upon a vague

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* Mr. Sibson, describing the road from Warrington to Lancaster, says, "it is probable there has been a fortified camp" at Walton, "to protect the pass of the Ribble." He adds, that Walton is Val-tun, or fortified town. The Rev. John Whitaker says Gual is the British word for rampart, and is formed into *Wall, Val, Bal,* and *Ual* or *Al.*"

tradition, and a conjecture of the ever daring elder Whitaker, endorsed by the historian of Whalley. The latter learned antiquarian afterwards discovered that this position was not tenable, and honorably acknowledged it. Mr. Edward Baines, however, in 1836, published a singular paragraph on this subject, from which we might infer that, in his opinion, Ribchester had been a seaport in the time of the Roman domination. He says:—"It must be acknowledged that *Preston was not a Roman station*; but that when, by the gradual recession of the waters, or by that mighty convulsion of nature which threw up the huge mass of Pendle, and deranged the whole system of plants and minerals in the vale of the Ribble, to a great extent Ribchester sunk into decay, Preston rose upon its ruins and became the principal port of Lancashire." He further adds, in a note:—"No Roman remains have been found here" (Preston) "while at York, Lancaster, Ribchester, and Manchester, they abound."

Some antiquaries appear to expect that all remains ought to "come into court" at their bidding, or, thenceforth "hold their peace," in order that their theories may be freed from the disagreeable necessity of being reconciled with facts subsequently discovered. It would, however, have been very remarkable indeed, if such remains could have survived the mighty convulsion alluded to. In comparison with the time of the heaving up of the "huge mass of Pendle," the Roman occupation of England is but a thing of yesterday, as the merest tyro in Geology at the present day will easily understand. Mr. Baines afterwards altered his opinion and contended that the presence of the red rock in the bed of the river disproved the assumption of the elder Whitaker. The Rev. John Clay, however, in his lectures on the Ribble, strongly maintained that Ribchester had been a seaport, and that the bed of the river had been elevated by an earthquake, since the period of the Roman occupation.

The discovery of the remains in the centre of the alluvial deposit between the Ribble and the Darwen, opposite the ford over the former, furnishes better evidence of the condition of the valley with regard to tidal action, than a thousand speculations, however ingenious. The circumstance that the red rock crops out at an angle, and that the immense depth of debris in the valley is stratified horizontally, is satisfactory proof that the latter has been deposited *since* the elevation of the former, at whatever period that event occurred. The discovery at Walton may be said fairly to set

this question at rest; for if the tide had, at the time alluded to, risen six feet higher, or, what would amount to precisely the same thing, had the valley of the Ribble been depressed but six feet, the station could not have existed. Indeed, it must have required *then*, as *now*, to be well embanked, to protect it from the ravages of the winter floods, providing the river current and the tidal flow were no greater than at the present time. In all human probability the valley of the Ribble presents nearly the same general features as when the Roman legions left the country. Its superficial aspect may have changed; the alluvial deposits may have increased; the river channel may have become "sanded up," or diverted; marshy swamps may have been converted into solid earth; the dense oak forests which once crowned its banks, may have fallen before the axe of civilization; but no *proof* has yet been advanced that its *great* outlines have changed since the day when the painted Setantian warriors succumbed to Roman discipline and Roman valour, and resigned their stronghold in the midst of the swamps of Walton, to the soldiers of the victorious Agricola.

ON THE ETHNOLOGY OF SOUTH BRITAIN AT THE PERIOD OF THE EXTINCTION OF THE ROMAN GOVERNMENT IN THE ISLAND.

By Thomas Wright, Esq., M.A., F.S.A., &c.

(Read 1st May, 1856.)

In a paper read at the meeting of the British Association in this town in 1854, I endeavoured to show the error of the popular notion that there was anything like uniformity of race in the population of this island when it was first visited by the Roman arms, and the more than probability that it contained Teutonic as well as Celtic blood. Of the ultimate fate of this population we are left in great uncertainty, arising not only from the deficiency of direct information on the subject, but from the different applications of the name Britons in subsequent times, when it was usually applied to the Roman population of the island, but sometimes, when given to a people independent of the Roman power, to the Caledonians of the north, who alone continued in a state of hostility to the conquerors. I am not aware that in any instance in the later Roman historians the name of Britons is applied to the remains of the peoples who inhabited our island in the time of Cæsar, and I confess that I have serious doubts if there existed any representatives of the ancient Britons to whom that name could have been applied, unless it were the servile class which was attached to the soil, and which held no place in the political history of the country, except by occasional and partial insurrections into which they were driven by oppression or by the hope of plunder. Under the government of Agricola, as we learn from Tacitus, a policy of comparative gentleness and conciliation was adopted towards the Britons, but this appears to have been abandoned under his successors, and we have every reason to believe that the older population of the island was afterwards treated with an oppressive severity, the effect of which during four centuries may easily be imagined. Among the numerous Roman inscriptions which have been found of a date subsequent to the first century, commemorative of individuals, we never find the name of a Briton.

Britain, as a Roman province, had not only changed its population, but the forms of society had changed entirely. We may form a notion best and most correctly of the mode of life and of the degree of civilization of the ancient Britons by comparing them with what we know of those of the wild Irish and of the Celtic highlanders of Scotland in the middle ages. Living in septs or clans, each collected round a petty chieftain who had his residence or place of refuge in the least accessible part of his little territory, they had no towns properly so called, and no tie of union, except the temporary one of war, or a nominal dependence on some powerful chieftain who had induced, by some means, a certain number of the smaller clans to acknowledge his sovereignty. Under the Romans, on the contrary, Britain consisted politically of a number of cities or towns, each possessing its own independent municipal government, republican in form and principle within themselves, but united under the empire through the fiscal government of the province, to which they were tributary. Each of these cities, inhabited by foreigners to the island, was expected to defend itself if attacked, while three legions and numerous bodies of auxiliaries protected the province from hostilities from without, and held it internally in obedience to the imperial government. The country was unimportant, and the towns were everything.

It is not my object on this occasion to enter into the political constitution of the cities and towns in Britain, but to speak of them merely ethnologically. In this particular case, there is a great difficulty in destroying the wrong impression made by the terms which are necessarily employed in history. If we call the people Romans, the term is correct politically, but incorrect ethnologically; and if we call them Britons, the name is incorrect both politically and ethnologically, and correct only geographically. The population of Britain during the second, third, and fourth centuries of the Christian era was neither Roman nor British, but an extraordinary mixture of all the different races who had been reduced by the arms of Rome. We have several classes of independent evidence on this point. First, that important record, the Notitia Imperii, compiled at the very close of the Roman period, gives us the titles and country of the different garrisons of the more important posts in the province at that time. We learn there that Frisians held the town or station of Vindobala on Hadrian's wall, and that Stablesians, believed to be a people from Germany, were stationed at Garriannonum in Suffolk. There were Tungrians at Dubræ, or Dover,

and at Borcovicus and Petriana on the wall; Lingones at Segedunum and Congavata on the wall; Nervii at Dictis in Westmorland, and at Alionis; Betasians at Regulbium; and Batavians at Procolitia; all from Belgium. We further find Gauls at the Portus Lemanis in Kent, at Vindolana in Northumberland, and at Glannibanta; different peoples from Spain and Portugal at Anderida in Sussex, at Magæ in Yorkshire, and at Condercum, Cilurnum, Æsica, and Axelodunum; Moors at Aballaba in the North, and another supposed African tribe at Arbeia in Westmoreland; Thracians at Gabrosentis on the wall; Dacians at Amboglanna; Dalmatians at Magna on the wall, at Branodunum in Norfolk, and at Præsidium in Lincolnshire; Fortensians, from Asiatic Sarmatia, at Othona in Essex; Crispians, from Pannonia, at Danum in Yorkshire; Solenses, from Cilicia, at Maglone.

Secondly, many inscriptions found on Roman sites in this island, confirm the statements of the Notitia, and add names of other foreign races in different parts of Roman Britain. Thus we find, from these inscriptions, Lingones from Belgium, Gauls, and Dacians, in different parts of Cumberland; a people called Cavetii at Old Penrith; Spaniards, Dalmatians, and Betasians in the neighbourhood of Ellenborough; Germans at Brougham; Tungrians, Gauls, Spaniards, Thracians, Hamii (from the Elbe), Nervii, Belgians named Cugerni, and Germans, in different stations in Scotland; Vangiones, from the banks of the Rhine, at Risingham in Northumberland: Varduli, from Spain, at Riechester and Lanchester; Thracians at Bowes in Yorkshire; Sarmatians at Ribchester in Lancashire; Frisians at Manchester; Thracians, again, at Wroxeter in Shropshire; and Thracians and Indians at Cirencester. We further learn from sepulchral inscriptions that one Dannicus, who belonged to the Indian cavalry stationed at Cirencester, was a citizen of Rauricum in Switzerland; that Sextus Valerius Genialis, of the Thracian cavalry at the same town, was a Frisian; that Titus Domitius Heron, prefect of the second cohort of Gauls at Old Penrith in Cumberland, was a native of Nicomedia of Bithynia in Asia Minor; that Crispinus Aemilius, prefect of the Ala Augusta at Old Carlisle, came from Tusdrus in Africa; that Publius Ælius, another prefect of the same Ala, was a native of Mursa in Lower Pannonia; that Marcus Censorius, prefect of the cohort of Spaniards at Ellenborough, came from Nîmes in Gaul; that an officer at York named Lucius Duccius was a native of Vienna in Gaul; that Flavius Longus, tribune of the twentieth legion at Chester, was a native of Samosata in Syria; that Nominius Sacer, an individual

buried at Lincoln, was of the city of the Senones in Gaul; that Caius Valerius, standard-bearer of the second legion at Caerleon, was a native of Lugdunum in Gaul; that Julius Vitalis, an officer of the twentieth legion, buried at Bath, was a Belgian; that Caius Murrius, of the second legion, also buried at Bath, was a native of Forum Julii in Gaul; that Caius Cornelius Peregrinus, the tribune of a cohort at Maryport in Cumberland, was a native of Mauritania; that Cornelius Victor, a soldier of the Gauls of Vindolana, was a citizen of Pannonia; and that others mentioned in the inscriptions were Greeks. It must be remembered that the information we thus obtain is very partial, and that we might perhaps have found many other varieties of race in other places in this island, if they had found a place in the Notitia, or if any inscriptions had remained. Other evidence, of a different kind but to the same purpose, such as inscriptions on pottery, &c., are also found. On a circular plate of earthenware found at Colchester we have roughly scratched the cartouche of the name of an Egyptian king, which would seem to show the presence there of Egyptians, and of an Egyptian who was acquainted with hieroglyphics.

The inscriptions, which are generally of much earlier dates than the Notitia, in combination with this record, prove that the same troops remained in each locality during the whole period of the Roman occupation, in fact that they were all virtually so many little military colonies. They show also that, whatever may have been the case at first, these different troops were not always recruited from the countries whence they were derived. It will be remarked in the list given in the Notitia, that the Germans and Belgians together were far more numerous than the others, and many circumstances lead us to believe that even the troops, or colonies, which were named after other and more distant countries were in later times recruited chiefly from the Teutonic tribes, which presented the readiest nursery of soldiers in the declining age of the Roman empire.

We are thus enabled to state that the "Roman" population of Britain consisted of a mixture of very different race, among which there was probably but little pure Roman blood and no British blood. This population was distributed in cities and towns with independent municipal governments, and most of the great landholders in the island were no doubt leading citizens in these towns. They were bound together by a common language, that of Rome, and by the adoption of Roman manners, the result of which was the feeling of a new nationality. Indeed we cannot

give a better notion of what they were than by comparing them with the British settlements in America, while these remained dependent upon the mother country, bearing in mind that the variety of race was much greater in the one case (that of Roman Britain) than in the other. Even the Roman legions, whose duty it was to keep the island in subjection, exhibited in later times the same diversity of race, and we find them actually making common cause with the towns, in their rebellions against the superior government.

One of the great vices of the Roman rule was the oppressive taxation of the provinces, which led not only to general rebellions of all the towns united, but apparently to frequent cases of resistance to the imperial authority by single towns, or by two or three towns in confederacy; and in such cases the rebels invoked the assistance of the German and Northern pirates, and even called in the aid of the still wilder peoples of Caledonia. There was moreover hostility between different towns, arising sometimes from difference of race and partly from commercial or other rivalry, which doubtless contributed no little to the turbulence of this distant province. In Gaul, the history of which is much better known, we trace more plainly these rivalries of the towns, and see how they sometimes degenerated into deadly hatred. In Britain, unfortunately, in consequence of the very limited information which remains, we can only trace its existence by implication. Thus, soon after the middle of the fourth century, when the island province was delivered from the ravages of the Picts, Scots and Saxons, by the imperial general Theodosius, the way in which the historian Ammianus Marcellinus speaks of the event is such as to leave no doubt on our minds that the joint invasion had been encouraged, if not prompted, by the rebellious towns, and that the primary cause of their rising was the inattention of the emperor Valentinian to their complaints of oppressive taxation. A few years later, in 383, the islanders entered into a still more formidable rebellion, and proclaimed Maximus emperor, who carried the troops of Britain over to the Rhine, where he was immediately joined by the Germans. In the beginning of the fifth century, we again find the cities of Britain revolting, when they conferred the title of emperor on a man named Marcus, whom they slew in 407, and chose in his place a person named Gratian, who is distinctly stated by the historian to have been a *municeps*, or burgher of one of the towns, of Britain. They let him reign four months, and then put him to death, and chose another man, named

Constantine, to be emperor. This man, possessed of more vigour and talent than his two unfortunate predecessors, imitated the example of Maximus, and, crossing over to the continent, found there sufficient sympathy to enable him to usurp for a time the empire in the West. After this usurper's departure from the island with, no doubt, great part of the legionary troops, the towns in Britain governed themselves, and protected the province so effectually, that they drove away the Saxons, who had seized upon the occasion to invade it; and when the usurpation of Constantine was suppressed, the cities of Britain retained their independence. Very soon after this, in the year 410, the emperor Honorius addressed letters to the cities of Britain, telling them to do what in fact they were already doing,—to provide for their own safety; and he thus acknowledged their independence.

The Roman population of Britain appears to have been, when united, capable of doing all that the letters of Honorius recommended to it, and the province does not appear to have been weakened by being cut off from the empire, or to have been immediately exposed to the attacks of external enemies. But tradition confirms what appears to be implied by history, that the towns of Britain soon became involved in domestic dissensions and civil wars. We are assured by the later Roman writers that the officers and leading men in the towns in Britain were remarkable for their ambition and love of intrigue; they had now the liberty as well as the inclination to act, and we can easily see, through the obscurity of history at that time, confederacies and counter-confederacies among the towns, in which the old commercial rivalries as well as ambition would play a part, and which led to civil wars and confusion; and it was then that the external enemies, as well Jutes, and Saxons, and Angles, as Picts, and Scots, and Irish, and others, were induced by the prospect of plunder or by the invitations of the contending parties to rush into the province.

The Roman towns were still strong, although they had lost the unity which made the strength of the island, and it took years to reduce them all under the power of the Teutonic invaders, who thus established themselves gradually. The brief story of the Saxon invasion told in the Saxon records is that of the successive reduction, sometimes at rather distant periods, of the Roman towns to their obedience. The Teutonic settlers were a race who, like the ancient Britons, were not accustomed to live in towns, and were in fact prejudiced against them, and wherever they took one by storm or

entered it unconditionally, they plundered and destroyed it. But the larger fortified towns were not easily taken, and the greater number, after unsuccessful attempts at resistance in the field, appear to have yielded upon composition. The ambition of the great chiefs of the conquering race, who soon became emulous of Roman civilization, could not be otherwise than flattered at possessing towns where the articles of Roman ostentation and luxury were manufactured, and when they aspired to form kingdoms, the prospect of an annual revenue in the shape of tribute would restrain the otherwise natural eagerness for present plunder. Antiquarian discovery is continually confirming what many circumstances would lead us to believe, that, while the whole land without was distributed among the Anglo-Saxon conquerors, the original Roman population of which I have been speaking, formed at first from various races, but afterwards recruited chiefly from Germany and Gaul, remained in the towns, coexistent with the new Anglo-Saxon lords of the soil, and still retaining their municipal forms and institutions and their Roman manners, until these became gradually more and more assimilated to those of the Saxons, a change which would be facilitated by the prevalence of Teutonic blood in the towns themselves. The natural antagonism which must have remained between the townsmen and the conquerors continued to exist through the middle ages, and has even reached our own times in a certain sort of rivalry between town and country. I need only add, that to this preservation of the towns, we owe our municipal corporations of the middle ages.

The conclusions I would draw from these considerations are, that at the close of what is called the Roman period of the history of Britain, the remains of the original Celtic population were very small, and perhaps consisted chiefly or entirely of the peasantry who cultivated the land as serfs. Further, that the "Britons" who struggled against the invasions of the Picts and Scots and Saxons were a mixture of races foreign to the island, and lived congregated in towns, and that when the Anglo-Saxons at last obtained the ascendancy, the remains of this population continued to exist among them, and became part of the Saxon States, while the peasantry probably continued to exist in the same servile condition as before. In fact, that the popular story that the people who resisted the Saxons was the ancient Celtic population of the island, and that it retired before the conquerors until it found a last refuge in Wales, is a mere fiction. It may be added that these conclusions are in perfect conformity with what is known

to have taken place in other countries similarly situated. If we cast our eyes over a map of Saxon England during the sixth or seventh century, we shall see that the only towns of any importance then existing were actually the great Roman municipal settlements. To mention but a few, we have, first, the chief town in the island, London; to the South-east of it, Canterbury and Rochester, with the old Roman port towns; to the North-east and North, Colchester, Leicester, Lincoln, Doncaster, York, Carlisle, with one or two towns in Lancashire; and Chester. Westward and Southward of London, we find the important towns of Chichester, Winchester, Old Sarum, Dorchester, Exeter, Bath, Cirencester and Gloucester. Between the historical notices of the Saxon chronicle, and the known continued existence of these towns, we can trace the advance of the Saxons from town to town, as each submitted itself to their supremacy.

I cannot resist the occasion, while on this subject, of pointing out a circumstance connected with it, which has, I think, a meaning that has not yet been discovered. As we trace the advance of the three great divisions of the Anglo-Saxon race in their progress of conquest and settlement, and examine the Roman sites over which they passed, we perceive the smaller towns and the country ravaged and destroyed, while, as I have said before, the larger towns saved themselves from destruction. Now if we look into Wales, which was certainly as completely subjected to the Roman government as any other part of the island, and which we find covered with Roman towns, roads, and settlements, which reached even into the wilds of Snowdon, the same scene of devastation presents itself—even to a greater degree, for while we find Roman towns scattered over Saxon England, we do not find that a single town to the West of the Severn escaped destruction. The strong town of Deva, or Chester, held its ground to the North, and Glevum, or Gloucester, survived, and a Roman town on the site of Worcester, may also have been preserved, but the line of strong towns between Gloucester and Chester—Ariconium, Magna, Bravinium, Uriconium—a number of important towns in South Wales, with Isca, or Caerleon, the station of the second legion—and other no less important towns on the Western and Northern coasts and in the interior,—all these are found to have been utterly destroyed. As this destruction was certainly not the work of the Anglo-Saxons, although it must have taken place during the period of the Saxon invasion, to whom may we ascribe it? If, according to the common story, the "Ancient Britons,"

withdrawing from before the Saxons, had made their last stand in Wales, and found there a place of safety, it seems absurd to suppose that they would have destroyed the towns and country which were to have been their protection. In fact I think that the circumstance I have just mentioned is sufficient in itself to contradict the old story, and that it seems to imply that, contemporary with the invasions of the Saxons and Angles, and the irruptions of the Picts and Scots in the North, Wales itself was visited by a similar and even more fatal invasion. If we further compare the circumstances of the two cases, it seems to me that we are led very strongly to the supposition that the Welsh may be settlers on the ruin of the Roman province on their side of the island, just as the Saxons and Angles were in England, and the Northern invaders in the districts of the south of Scotland. I know that many will be startled at so bold a theory, but I would wish it to be clearly understood that I merely offer it as a suggestion arising out of the consideration of the circumstances of which I have been speaking, and as deserving a fair and careful examination. It may be asked, if the Welsh are not ethnologically what they are commonly represented to be, who are they, and whence did they come? Our total ignorance of the history of the period to which this question refers, as far as regards them, renders it impossible to give any certain answer to it, but we might naturally turn our eyes towards Britany (Armorica), a country which in consequence of its physical character and condition, and from other causes, was never completely Romanised; in which, at the time of which we are speaking, there was apparently a tendency if not a necessity to emigrate; and the Celtic population of which, holding fiercely to their old nationality, were also, from that same position, accustomed to navigation, which was then equivalent to piracy. They might, likely enough join in the scramble for the plunder of Britain. It is unfortunate for the clearing up of this question, that much of what is considered as the history of Britany, during this period, consists of mere modern interpretations of late legends. At the beginning of the fifth century, the Armoricans had recovered their independence, resumed their ancient barbarism, which indeed they can hardly be said to have ever abandoned, and formed a sort of republic of chiefs of clans. We can, however, perceive by the slight notices of the authentic chroniclers, that the Armoricans, become independent, joined in the general spirit of aggression which urged the barbarians to the invasion of the Roman province of Gaul, and that subsequently, when Aetius directed

the Roman arms in Gaul, and just at the time of the Saxon invasion of Britain, the Armoricans themselves were closely pressed and partially subdued, and placed indeed exactly in that condition in which emigration would have attractions for its ambitious and turbulent chiefs. Britain alone offered any field for their activity. Moreover, we suddenly discover at this time a more intimate connection between Armorica and that island.

We can understand, if this were the case, why a people who had far less intelligence for the application of the advantages of civilization than the Saxons, destroyed all that remained of it, and as settlers, took to their own wilder way of living. I confess that there are some difficulties in the way of this solution of a very difficult question; but, at the same time, if it could be proved to be the true one, it would clear away other difficulties which are still more embarrassing. People speak of the so close resemblance between the languages of Britany and Wales, that I have seen and heard it stated by men who are understood to have known both languages well, that a Breton of the present day might hold conversation with a Welshman. Philologists know that such a close similarity as this is hardly within the range of possibility, after the natural changes which all languages undergo in so great a length of time;—if Welsh were historically the representation of a language spoken in Britain in the time of Cæsar, and Breton the similar representation of the language of ancient Gaul. Whereas, if we could suppose that Welsh was Breton, separated from it at the close of the Roman period, and therefore not having experienced the long intervening influence of Roman civilization, the close similarity of the two languages is much more easily understood. Moreover, I have always felt convinced that the mediæval legends of Wales were essentially Breton, and that all the romance literature to which they gave rise was derived from Armorica, and at the same time felt the difficulty of explaining a certain degree of relationship which they seemed to have with the minds and sentiments of the Welsh themselves, a difficulty which would disappear at once before such an explanation. The legends connected with the romance-cycle of king Arthur have always appeared to me to represent the mythic genealogy of the Celtic race as preserved in Armorica, and all our authentic information on the subject represents it as being introduced from thence into our island in the twelfth century. We must not forget that the *Historia Britonum* of Geoffrey of Monmouth was avowedly founded upon a Breton manuscript. Again, we know from what

is observed in other countries, where we are better acquainted with the early social progress, how soon a race in its emigration attaches to its new home the legends and traditions which really belong to the country it has left. These, combined afterwards with a few traditions of a more historical character, form what is usually called the fabulous or heroic period of a nation's history.

However, the present is not the occasion for entering upon this part of the subject, and I shall content myself with stating the suggestion which appears to me worthy of careful consideration. I will only add that a friend, who is profoundly versed in that part of the subject, has remarked to me, since this paper was first read, that he has always considered that a class of inscriptions found in Wales, and belonging apparently to the period subsequent to that of the Roman occupation, which resemble nothing of the sort found in other parts of England, present an analogy with the inscriptions of the same kind found in Britany, and with those only.

My object on the present occasion is more especially to enforce as strongly as I can, upon ethnologists, the necessity of paying constant attention to the historical materials of their science. That branch of it which may be conveniently and properly termed craniography, is at the present time making great advances, and at the same time it is a branch which requires to be treated with extreme caution. Of course we must find our crania in the graves, or, as they are in our island usually called, the "barrows," of the races which are under our consideration. When we have to deal with the well-known burial places of particular races, the subject is clear and simple; but this is not always the case, especially in Britain. I have endeavoured now to make clear to you, the extreme diversity of race which existed in this island under the Romans; and, in a paper which I wrote on a former occasion, and for another purpose, I gave reasons for believing that there was far from uniformity of race before the Romans placed their feet on our soil. Nevertheless, if we could place our hands on barrows or graves in this country, and say with certainty that these belonged to the ante-Roman period, we might still classify them according to their districts, and probably derive from the examination of them certain ethnological facts. But unfortunately this is not the case, and I do not believe that there has yet been found a grave in the island to the south of the Forth and Clyde, which you can venture absolutely to declare to have been older than the Roman period, or even to be that of a Celt. It is true

that there are one or two localities, such as the downs of Wiltshire, in which *probability* is in favour of the interments being Celtic, but this is still far from certain, and it would not be safe to found a system upon it. My own impression is, that we shall arrive at no important ethnological results from the mere examination of the skulls found in England in interments older than the Anglo-Saxon period; owing to the variety of races who had lived in the island contemporaneously or at different periods, and the impossibility of identifying the particular race to which any one interment belonged. With regard to the Anglo-Saxon cemeteries, there can be no doubt that they represent known races, and divisions of those races, and we can enter upon the investigation of them with certainty as to the foundation on which we build, and therefore with tolerable certainty as to the results. To these, therefore, as they may be rendered available to science in the course of future excavations, I would especially invite the attention of the craniographer, in the certainty that his labours will not be altogether thrown away. The opportunity of observation has already been lost in too many cases, but I believe that I can safely promise, that within a short period, new and favourable opportunities will occur, and I feel confident that they will not again be neglected. I trust that, now that the importance of such collections is becoming more generally known, many Saxon cemeteries from different parts of the island will pour in their contributions to our ethnological museums; while I would with equal care collect and examine the skulls from burials which are not Saxon, specifying their locality and the circumstances under which they were found, without calling them Celtic, or Roman, or by any other name, unless its appropriateness be very clearly ascertained.

ON THE LEPIDOPTEROUS INSECTS OF THE DISTRICT AROUND LIVERPOOL.

By Charles Stuart Gregson.

(Read 21st February,* 1856.)

In preparing this list, I have arranged the species in the position in which they would stand, in the great world of Lepidoptera. All who have gone before me have prepared their local lists as if there were not any other countries where Lepidoptera abound. This will explain the seeming irregularity of passing from Group "one" to "three" or "five" in a Genus, or of commencing a Family or Genus at "two," "four" or "six."

Part I contains the Diurnal Lepidoptera.

Part II the Sphingidæ and Bombycidæ.

Part III (previously printed) the true Noctuidæ, and

Part IV the Pyralidæ.

I propose that Part V shall include the whole of the Geometridæ.

Part VI, the Tortricidæ, and

Part VII, the Crambidæ and Tineidæ.

Omitted from Part III, Section 4.

Genus Miana, St.

M. erratricula, Hb.—Plentiful on flowers on the coast at dusk. July and August.

Genus Mania, Tr.

Group 2.

M. maura, Lin.—Plentiful on sugar in August. Hale and Croxteth.

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* The former portion of this paper is printed; Transactions volume vii. pp. 237–254.

PART I.

Class INSECTA.

Order Lepidoptera.

Section 1. Rhapalocera Bdv.

Papilionidæ.

Family 2. Pieridæ.

Genus Pieris, Bdv.

P. Brassicæ, Lin.—Abundant about Gardens. Larva on Cabbages, particularly in September and October.

P. Rapæ, Lin.—In profusion about gardens in summer.

P. Napi, Lin.—Plentiful at Linacre and Garston.

Genus Anthocharis, Bdv.

A. Cardamines, Lin.—Abundant from Allerton to Hale, and plentiful in the district between Crosby, Sefton, and Lydiate; a few may be met with in the swampy parts of Wirral, on the wing. April and May.

Genus Leucophasia, Steph.

L. Sinapis, Lin.—In a rough plantation between Hooton Station and Mollington. May.

Genus Gonepteryx, Leach.

Rhodocera, Bdv.

G. Rhamni, Lin.—Mr. Nixon took it at Hale in April. I took it at Simonswood in the end of July.

Genus Colias, Bdv.

C. Edusa, Lin.—I have seen three specimens captured within this district; —one by T. Dean, in Pigue Lane; one by Mr. Cauty, at New Brighton; and one by a non-collector, at Saughall Massey. August and September.

Family 3. Lycænidæ.

Genus Thecla, Fab.

T. Quercus, Fab.—I have taken this species in a piece of rough ground beyond Eastham. The Chester railway crosses this fine collecting ground. End of July and August.

T. Rubi, Fab.—Jackson's Wood, Hargreave Hall, and Sutton, Hale and Lydiate. Local. May.

Genus Chrysophanus, Hub.

Lycænæ, Och. Polyommatus. Bdv.

C. Phlæas, Bdv.—Generally distributed, the finest specimens between Bootle and Walton, in August.

Genus Polyommatus, Steph.

Lycæna, Bdv.

P. Argiolus, Bdv.—Taken around Eastham and Hooton, by T. Harris, Esq., and at Hale, by Mr. Nixon. May.

P. Alsus, Fab.—Two specimens by myself, at Neston. Several between Rainhill and Ditton. Early in June.

P. Ægon, Bork.—Plentiful on dry heaths, particularly on Bidston Hill in July.

P. Alexis, Fab.—In profusion on the sand hills and on the railway banks at Olive Mount.

Family 4. Erycinidæ.

Genus Nemeobius, Steph.

N. Lucina, Steph.—I have taken a few specimens of this species at the place at which I got Thecla Quercus. End of May.

Family 6. Nymphalidæ, Swa.

Genus Argynnis, Och.

A. Aglaia, Och.—Plentiful a few years ago at New Brighton; a few specimens may still be seen at this side of the Red Noses; not scarce from Little Brighton to Hightown, on the Lancashire coast, in July.

A. Euphrosyne, Och.—Not scarce in the rough woods beyond Bromborough. May.

Genus Melitæa, Fab.

M. Artemis, Fab.—Plentiful from Maghull to Lydiate, particularly on the canal bank. May.

Genus Vanessa, Fab.

V. Cardui, Fab.—Plentiful where its food abounds; its larvæ may be detected upon the thistles by the discolouration of the lower leaves. Flies in Spring and August.

V. Atalanta, Fab.—Plentiful where nettles grow. September.

V. Io., Linn.—Abundant, larvæ gregarious on nettles. Spring, July, and August.

V. Urticæ, Linn.—Larvæ in profusion on nettles.

V. C. album, Fab.—Hooton, Hale, Woolton, not plentiful; one in my garden September 12, 1854.

Family 9. Satyridæ.

Genus Satyrus, Bdv.

S. Semele, Linn.—Abundant on waste lands in July and August.

S. Janira, Och.—Common in pastures. June.

S. Tithonus, Linn.—Plentiful on sandy banks in lanes. July.

S. Megæra, Linn.—In lanes everywhere in Summer.

S. Ægeria, Linn.—Taken from Bromborough to Eastham, by Mr. Edmondson, on the high road. April.

S. Davus, Fab.—In profusion on Simonswood moss. June.

S. Pamphilus, Linn.—Common on unenclosed grounds.

Family 10. Hesperidæ, Bdv.

Genus Pamphila, Steph.

(Hesperiæ Auct.)

P. linea, Fab.—A single specimen taken by myself, July, 1841, is the only instance of its capture in this district, that I am aware of. I took it near Gill Brook, Birkenhead.

P. sylvanus, Fab.—Is abundant on Simonswood moss, and plentiful upon Crosby sand hills, in May.

Genus Thanaos, Dup.

T. Tages, Linn.—In profusion in the same localities as Pamphila sylvanus.

End of Part I.

PART II.

Section 2. Heterocera, Bdv.

Family 2. Sesiariæ, Bdv.

Genus Trochilium, Sco.

Sesia, Lasp. Ægeria, Fab.

T. Tipuliformis, Leach.—Taken at Hale Hall garden by Mr. Almond, and at West Derby by B. Cooke, Esq.

Family 3. Sphingidæ.

Genus Ægeria, Fab.

Æ. Bombyciformis, Hub.—May be taken on poplar trees at Birkenhead, before 11 a.m.; it sits on the trunk of the tree. I have naturalised this species around Old Swan and Highfield. I placed the eggs on various poplars and willow trees ten years ago; it is now an abundant species here.

Genus Sesia, Fab.

S. Bombyliformis, Fab.—I have only seen one specimen; it was taken at Bidston. One by Mr. Leyland from same locality. (Mr. Almond.)

Genus Macroglossa, Och.

M. Stellatarum, Och.—Plentiful on Wallasey and Crosby sand hills; flies on the highest hills when the sun is hottest. Larvæ on Galium verum.

Genus DEILEPHILA, Och.

D. Porcellus, Linn.—Plentiful flying over yellow Iris flowers, and over catch-fly flowers, about the coast. Dusk. May and June.

D. Elpenor, Linn.—May be taken with Porcellus. Larva on E. hirsutum in August.

GROUP 2.

D. Euphorbiæ, Och.—A specimen of this species taken in an out-house at Bidston, by W. Morgan, is now in my cabinet; two of its larvæ have been taken between Little Brighton and Hightown, from Euphorbia Paralias.

D. Galii, Fab.—A specimen taken by Mr. Rainford, between Bootle and Linacre Marsh.

D. lineata, Fab.—I possess a fine specimen taken by F. Hitchmough, at Hale, April, 1847.

Genus SPHINX, Linn.

S. Convolvuli, Linn.—Oxton Hill, Liscard, Hale, and New Brighton, over petunias and hollyhocks. Dusk.

Genus ACHERONTIA. Och.

A. Atropos, Och.—Hale, Bidston, and Bootle, on potatoes; 17 bred by W. Rainford; fed upon *Lycium lanceolatum*.

Genus SMERINTHUS, Lat.

S. Ocellata, Linn.—Plentiful under overhanging banks at New Brighton, in June; larva on sallows in August.

S. Populi, Linn.—Plentiful where Ontario poplars grow, in June; larva in August.

FAMILY 4. ANTHROCERIDÆ, West.

Genus ANTHROCERA, Scop.

A. Trifolii, Esp.—In profusion on Hale Marsh. June.

A. ——— ?—A 5 spot, Loniceræ? near St. Helens, on a dry hill-side on the road to Eccleston.

A. Filipendulæ, Linn.—Common on waste lands and about old pastures.

Genus PROCRIS, Fab.

P. Statices, Fab.—Hale Marsh, the Dungeon, and below Crosby. June.

FAMILY 5. LITHOSIDÆ, Steph.

Genus EUCHELIA, Bdv.

E. Jacobæa, Linn.—Plentiful on the coast and upon the mosses, in June. Larvæ on Senecio Jacobæa, July.

Genus Lithosia, Fab.

L. Rubricollis, Fab.—I have bred this species from pupa in moss about Jackson's Wood, and Bidston.

L. complana, Linn.—Simonswood Moss; two specimens taken on the wing at dusk; others seen end of July, 1851.

L. Complanula, Bdv.—Plentiful around West Derby, where beeches grow. Larvæ on beech trunks when covered with Lichen ———?

L. Mesomella, Linn.—I meet with this insect sometimes in a wood between the Little Britain inn and Simonswood Moss. June.

Genus Nudaria, Haworth.

N. Munda, Linn.—Abundant from Tranmere Hall to Prenton, in June; feeds upon Lichen on old stones. Bred freely by Mr. Almond.

Family 6. Arctiidæ, Leach.

Chelonides, Bdv.

Genus Nemeophila, Steph.

N. Russula, Linn.—In the swampy ground in Jackson's Wood, and at the Decoy at Hale. July.

N. Plantaginis?—Prenton Hill and Stourton; flies before noon.

Genus Arctia, Steph.

Group 1.

A. Caja, Linn.—Abundant in the larva state in lanes.

Group 2.

Genus Phragmatobia, Steph.

P. Fuliginosa, Linn.—Common on waste lands. May and August.

Group 3.

P. Lubricepeda, Fab.—In profusion about gardens in June.

P. Menthastri, Fab.—In lanes and gardens; common.

P. mendica, Linn.—About dirty gardens in Wirral, where chick weed grows freely, particularly if there are lettuces growing amongst the chick weed.

Family 7. Liparidæ.

Genus Liparis, Och.

Group 3.

L. Salices, Och.—Larvæ plentiful at Crosby; feeds upon Ontaria poplar in May.

Group 4.

L. Auriflua, Fab.—Larvæ abundant in the thorn hedges at Bidston and Wallasey, in July.

Genus Orgyia, Och.

Group 1.

O. Cœnosa, Hub.—My friend, T. Townley, first discovered this species at Altcar, and afterwards at Bidston Marsh. Larva on reeds in May.

Group 2.

O. pudibunda, Och.—Plentiful near woods and plantations.

O. fascelina, Och.—Larvæ in profusion on the sallows at Crosby, in April and May.

O. Coryli, Och.—A few bred from larva, taken at Croxteth Park.

Group 3.

O. antiqua, Och.—Abundant throughout the district, on the wing. August and September.

Family 8. Bombycidæ.

Genus Clisiocampa, Curtis.

C. Neustria, Linn.—Plentiful from Upton to West Kirby. July.

Genus Eriogaster, Germar.

E. Lanestris, Germ.—Larvæ plentiful on dog rose and thorn, about old pits in Wirral. May and June.

Genus Pœcilocampa, Steph.

P. Populi, Linn.—Bidston Light House, and at lamps in West Derby. October and November.

Genus Lasiocampa, Steph

L. Rubi, Linn.—Common on heaths and waste lands. May.

L. Quercus, Schr.—Plentiful at the same places as Rubi. June and July.

L. Trifolii, Fab.—Larvæ abundant in May at New Brighton and at Crosby; perfect insect in August.

Genus Odonestes, Ger.

O. potatoria, Germ.—Common in lanes.

Family 9. Saturnidæ.

Genus Saturnia, Sch.

S. Carpini, Bork.—Plentiful on heaths and mosses. April and May.

Family 11. Zeuzeridæ.

Genus Cossus, Fab.

C. Ligniperda, Fab.—Has been taken all around the district.

Hepialidæ, Steph.

Genus Hepialus, Fab.

H. Humuli, Linn.—Common on grass land in June.

H. Velleda, Esp —Wood near Simonswood Moss, on honey-suckle in July.

H. sylvinus, Linn.—Liscard and New Brighton; on the wing at dusk in July.

O. lupulinus, Fab.—Abundant in old lanes. June.

H. Hectus, Fab.—In damp woods; flies about at 7 o'clock, p m, at Bromborough, Hale, and Croxteth. June.

FAMILY 14. DREPANULIDÆ.

Genus CILEX, *Leach.*

C. spinula, W. V.—Plentiful in lanes. June.

Genus PLATYPTERYX, LasP.

GROUP 1.

P. lacertula, Esp.—Birch Wood, and near Simonswood Moss.

GROUP 2.

P. falcula, Hub.—Common where Lacertula is taken. May and June.

FAMILY 15. NOTODONTIDÆ.

PSEUDO-BOMBYCINI, Boisd.

Genus CERULA, Sch.

C. bifida, Hub.—Prenton Wood and Wallasey, on poplar trees. May.

C. Vinula, Sch.—Plentiful where poplars and willows grow. May.

Genus NOTODONTA, Och.

GROUP 1.

N. camelina, Och.—Larvæ plentiful on sallows in the pleasure grounds at Bidston, in September; also on birches.

GROUP 2.

N. dictæa, Och.—Larva on sallows and poplars; perfect insect; comes to lights.

N. dictæoides, Esp.—Comes to Bidston Light House on dark nights in July. Larva on *birch* August and September.

GROUP 3.

N. Dromedarius, Och.—I take its larvæ at Simonswood and at Birch Wood, by beating in September.

N. ziczac, Linn.—Larva on willows on the coast. September.

GROUP 5.

N. chaonia, W. V.—First taken by B. Cooke, Esq., on a gate-post at Eastham. Two at Hooton by T. Harris, Esq. April.

Genus DILOBA, Boisd.

D. cæruleocephala, Linn.—Common at lamps in Autumn. West Derby.

Genus PYGÆRA, Boisd.

P. bucephala, Linn.—Larvæ common on oaks and willows in August.

Genus Clostera, Hoff.

C. Reclusa, Fab.—One specimen taken at the old wood in Kirkby, is all I have seen in this district.

End of Part II.

PART III.—See Vol. vii. p. 242.

PART IV.

Section 6.

Heterocera.

Deltoidæ.

Family 2. Hypenidæ, H. S.

Genus Hypena, Schrank.

Group 3.

H. probosidalis, Och.—Abundant in stables.

Genus Hypenodes, Gn.

H. costæ-strigalis, St.—Plentiful on Prenton and Bidston Hills. Comes to sugar in July.

Family 3. Herminidæ, Dup.

Genus Rivula, Gn.

R. sericealis, W. V.—Hut of Hut's Wood, Hale. May and June.

Genus Herminia, Lat.

Group 4.

H. tarsicrinalis, Knock.—Taken by W. Skellon at Green Bank.

H. Grisealis, W. V.—Not uncommon in Bidston Plantation, and plentiful at Kirby Old Wood, and at Hale.

Group 7.

H. cribralis, Hub.—Specimens taken by Mr. Nixon, at or near Hale.

Section 7.

Pyralidæ.

Family 1. *Genus* Pyralis, Linn.

Group 2.

P. farinalis, Linn.—In profusion in granaries.

Group 3.

P. glancinalis, Step.—One taken at Hale Bank is in my cabinet.

Genus Aglossa, Lat.

A. pinguinalis, Lat.—Plentiful in old stables.

Section 8.

Luridæ, Gn.

Family 2. Ennychidæ, Dup.

Genus Pyrausta, Sch.

P. punicealis, W. V.—Lydiate. Scarce.

P. purpuralis, Curt.—Sutton, Parkgate, and Ditton.

P. ostrinalis, Curt.—Plentiful on the sand hills.

Genus Rhodaria, Gn.

R. sanguinalis, Linn.—Wallasey sand hills, where wild thyme grows. Evening, June.

Genus Herbula, Gn.

H. cespitalis, W. V.—Not scarce on the Cheshire coast sand hills.

Genus Ennychia, Tr.

E. cingulata, Step.—Plentiful, but local, on the Wallasey sand hills; flies about 5 p.m. May and August.

Family 5.

Hydrocampidæ, Gn.

Genus Cataclysta, H. S.

C. Lemnalis, H. S.—In every old pit.

Genus Paraponyx, Steph.

P. Stratiotalis, Step.—May be found in a large pit behind New Brighton, on the lower side, opposite the stile road to Wallasey Church; is also in a round pit on Bidston Marsh. Flies at dusk, June.

Genus Hydrocampha, Lat.

H. Nymphæalis, Step.—Abundant around pits. June.

Family 8. Botydæ, Gn.

Genus Botys, Lat.

Group 4.

B. Fuscalis, W. V.—Plentiful on Bidston Marsh. June.

Group 5.

B. Urticalis, Steph.—Abundant at Liscard, and pupæ plentiful on white poplar, under loose bark.

Genus Ebulia, Gn.

E. crocealis, Tr.—Woods around Kirkby, Eccleston, and Lydiate. June.

E. Sambucalis, Albin.—Plentiful at Wallasey, Ford, and Linacre, in garden hedges.

Genus Pionea, Gn.

Group 2.

P. forficalis, Linn.—May be bred from larvæ found in curled leaves of Silene inflata, in May.

Genus Spilodes, Gn.

Group 2.

S. sticticalis, Linn.—Two specimens taken by N. Cooke, Esq., and five specimens taken by R. S. Edleston, Esq., at Wallasey sand hills, are all that have yet been taken here. July, in the sun.

Genus Scopula, Sch.

Group 1.

S. lutealis, Haw.—Abundant about ditches; bred from Silene inflata. June.

Group 2.

S. olivalis, W. V.—Plentiful in damp places, particularly in woods.

S. Prunalis, W. V.—Abundant on Bidston Marsh and at Hale. June.

Group 4.

S. Ferrugalis, Hb.—I once met with this species in a clump of trees, at the bottom of Mrs Peacock's garden, at Saughall Massey. I have not heard of it in any other locality.

Scoparidæ, Gn.

Genus Stenopteryx, Gn.

S. hybridalis, Hb.—Plentiful on Bidston Marsh, and on the sand hills.

Genus Scoparia, Haw.

Group 2.

S. ambigualis, Tr.—May be taken at Jackson's Wood, and at Birch Wood. July.

S. cembralis, Haw.—Neston and Woodchurch. June and July.

S. muralis, Curt.—Prenton Hill. June.

S. mercuralis, Haw.—Bidston Hill and Fir Grove. End of May.

S. truncicolalis, Sta.—Prenton Wood. July.

S. frequentalis, Sta.—Bidston, Edge Lane, and Green Bank. End of May.

S. disputalis, Greg. N.S.—Simonswood Moss. May. This distinct species is nearest allied to Frequentalis, Sta., and Mercurialis, Haw., but is readily distinguished from both these species, by its more suffused

appearance, the first fascia being less sharply defined, and the outer fascia more acutely bent outwards, the upper wings broader, and the under wings lighter, than in either of the above insects. Plentiful.

S. resinalis, Haw.—Fir Grove, Croxteth, and Allerton Hall. May & June.

S. coarctalis, Zell.—Plentiful throughout the district. Summer.

Group 3.

S. palidulalis, St.—Bidston Marsh, and on the wet land below Crosby, Simonswood, and other mosses.

End of Part IV.

ABBREVIATIONS OF AUTHORS REFERRED TO.

Alb.	Albin's Natural History of English Insects. London, 1724.
Bdv.	Boisduval's Europæorum, Lepidopterorum. Paris, 1840.
Bork.	Borkhausen Europaischen Schmetterlinge. Franckfurt, 1792.
Cl.	Clerck James, Insectorum Rariorum. 1764.
Curtis or Curt.	Curtis' British Entomology. London, 1823-1840.
Dalm.	Dalman Anatecta Entomologica. 1823.
De Geer.	De Geer. History of Insects.
Dup.	Duponchel. Natural History of Insects, and Catalogue. 1844.
Esp.	Esper. Die Schmetterlinge in Abbidungen nach der natur. 1786.
Fab.	Fabricius Entomologia Systematica. 1793.
Ger.	Germar. Magazin der Entomologia. 1813-1821.
Gn.	Gnenée. Essai sur les Noctuélites, &c.
Haw.	Hawarth Lepidoptera Britanica. 1803.
Hb.	Hubner Sammlung Europaischer Schmetterlinge. 1796.
Lat.	Latreille Gen. Crustaceorum et Insectorum. Paris, 1806-1809.
Linn.	Linne Systema Naturæ. 1767.
Och.	Ochsenheimer Systema Glossatorum Europæ. 1811.
H. S.	Herrich Schoeffer. 1844 to 1846.
Sch.	Schrænck Fauna Boica. 1801.
Scop.	Scopoli Entomologia Carniolica. 1763.
St. or Steph.	Stephen's Illustrations of British Entomology. 1829.
Tr.	Treitschke Schmitterlinge von Europa. 1825-1826.
Westw.	Westwood. Westwood and Humphry's Butterflies and Moths. 1841-1845.
W. V.	Wiener Verzeichniss. 1801.

ON THE AREA AND POPULATION OF THE MANCHESTER DISTRICT.

By J. T. Danson, Esq., F.S.S., Vice-President.

(Read 14th February, 1856.)

Near Manchester there are fifteen other towns*, so connected with it by the manner in which all have come into and are kept in existence, that I see no way of dealing with them asunder, and justly. Hence I say "the Manchester District"—not "Manchester."

OUTLINE.

A circle having Manchester in its centre, and a radius of about fourteen miles, would include all these towns and their suburbs. But the district is not circular, nor is Manchester, in a geometrical sense, even near its centre.

Were the district described by a line drawn round the entire group of towns, and passing at a minimum distance of five miles from the centre of each of the outer ones, its greatest length would be on a line nearly due east and west, from Leigh through Manchester and Staleybridge—about twenty-nine miles. And the area of the district thus described would be about 341 square miles, or 218,240 acres.

The divisions of the surface now in use for enumerating the population

* To the word "town" I here attach this meaning, and no other, viz.,—that of an area, great or small, inhabited, permanently, by a minimum number of persons, whose number, in relation to the area occupied, affords an average density not below another minimum. In this instance, the minimum number is 2000 persons. The minimum density is ten persons per acre. Thus I call Atherton a town, because, on 250 acres of ground, I find there, in 1851, 2,780 persons. And I call Eccles a town, because on 325 acres, I there, at the same date, find 4,108 persons. In a previous paper, on the population of Liverpool and its environs, I have distinguished town from suburbs. Here this distinction is not marked. It was not necessary to the purpose in view; and would, if attempted, have involved a serious addition to the labour of the gentleman to whom I am indebted for the computations on which the greater part of the present paper is based. So much for the guidance of the reader; and not more, I am assured, than is needed. If he can form a better definition of a town than the one here used I shall be glad to hear from him.—J. T. D.

of this area do not coincide exactly with the boundary thus assumed. But the difference is not great. If we take all the Parishes and Townships, considerable portions of which lie within the assumed boundary, and make, in each case, only such allowances for surplusage as seem to be quite necessary, they are found to cover a gross area of 222,576 acres, or nearly 348 square miles.

A comparison will make clearer the significance of these figures.

London and its suburbs, described together in the census of 1851 as "the London District," has an area of 78,029 acres. In other words it was, in size, compared with the Manchester District, as two to seven nearly.

The population of the 348 miles of the Manchester District, in 1851, was 1,044,816 persons. That of the London District, at the same date, 2,362,236. Here the proportion is reversed. Though three and a half times as large, the provincial district has not half the population of the metropolitan. In few words, the London District is about eight times as densely peopled as the Manchester District.

Nevertheless, apart from the London District, there is no other in the United Kingdom, and, excepting also Paris and its suburbs, no other in Europe, on which a million of persons are so closely placed as they are in the Manchester District. And in one respect this group of population stands before every other of like magnitude in Europe, or perhaps in the world. *It has increased with greater rapidity during the last fifty years.* In 1801 the London District contained a population of 958,863—the Manchester District, as above described, one of 311,544 persons. In the fifty years 1801-51, for every one hundred persons at the beginning, 146 were added in the London District, and 236 in that of Manchester. On the other hand, it will be observed that the difference already established between the two districts is so great, that the lapse of even another half century, with the same rate of increase in each, would not much disturb their present relative proportions. The Manchester District would, in 1901, have only about three-fifths of the population of the London District; and the relative density would be only about one-fifth, instead of one-eighth.

The same difference runs through the entire history of the two districts. London was a considerable port and mart, and a royal residence, when much of the Manchester District was yet a free and pleasant hunting

ground for wolves. And the manner in which the population of this district has been brought together explains it.

THE GERMS OF THE MANUFACTURING POPULATION.

On a fine clear morning some 520 years ago—the sunlight being thrown to the north-west—the view from Blackstone Edge, over the site of this district, must have presented an almost unbroken expanse of wood and waste. Its human inhabitants were few, and even less visible by their works than the same number would be now. The enclosures were very few, and the half timbered, or wattled, houses of the time, were less easily distinguished at a distance than the stone or brick edifices of a later date; and when grouped together, their fires, fed almost exclusively with wood, cast into the air no cloud of lingering smoke, to mark the whereabouts of a town.* On the right of a spectator placed as we have supposed, stretched the broad surface of Brandwood Moor—russet or purple, as the season might determine—while beyond, deeply embayed in the straggling northern hills, lay the dense dark foliage of Rossendale forest. Ranging westward across a long line of wooded bluffs and bare sunlit slopes, and trending a little to the south, the eye may have caught, in the foreground of a tract of high-lying moorland, the half-timbered walls and long thatched roofs of the town of Bolton, the population of which had of late received a notable addition in a little band of men, uncouth of garb and strange in speech, and destined to sow seed that, after long delay, should have a mighty growth. Curiously dexterous in the art of weaving woollen cloths, they had come from Flanders, at the instance of Edward III, with the consent of their liege lord, the Duke of Hainault, the king's father in-law, and under the guidance of an Englishman named John Kemp. (A.D. 1331.) Here they set up their looms, and wove, and taught weaving; and Bolton became, in due time, the centre of a supply of English woollen cloths such as had not been seen before.

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* Of the sixteen towns, records we may accept without much risk of being deceived, attest the existence, in some shape, at the period here referred to, of six. Manchester and Stockport were undoubtedly Roman stations, and were never afterwards abandoned by the people then collected around them. Bury was a Saxon town; and there is some evidence of its having also been a Roman station. Leigh, Rochdale, and Ashton-under-Lyne—the two former possessing ancient churches, and the last named claiming by other title an ancient existence—may also, if we accommodate our notion of a town to the circumstances of the time, be permitted to fall into the same category. Towns these, however, only such as might now be found in some parts of New Zealand or the Cape colony, and but small exceptions to the general aspect of the country.

But there was absolutely nothing in the aspect of the time to warrant augury of the gigantic ultimate growth of this Flemish seed. Nearly all the commercial energy and intelligence of Europe were still concentrated around a few centres, not one of which lay within a thousand miles of Bolton. The arts of book-keeping and banking, yet in their infancy, were unknown beyond the country of their birth, but these were used with a facility and success abundantly obvious in the history of the time. A Florentine banker farmed the customs revenue of England. Jews, the only capitalists in the country, still took interest on their loans in peril of personal mutilation and ruin, so could hardly look for less, on the best security, than thirty per cent. per annum. Commerce was growing, and learning was reviving, but more slowly in England than elsewhere. The Roman Church yet occupied the capital of Western civilization; and the crowning of Petrarch, and the tribunate of Rienzi, within the very same decennium—premonitory flashes of a new era in politics as in poetry—seemed to confirm to the old European centre of thought and action its ancient monopoly of wealth and power, even through a new day of knowledge and industry. It is to be observed, however, that the true sources of England's present greatness were then hidden, and could scarcely even have been guessed at. Maritime enterprise was limited, as in all past time it had been, to the narrow bounds of a continental coasting trade; and he was a daring man* who went so far to sea as to find the Madeira islands. Steam was undreamed of. The down of the cotton-pod was known, or used, only in the remote unvisited east. And though Newcastle coal did, about this time, make its first appearance in London, it had, as yet, no particular value to the Bolton weavers. Still must we deem the importation of these Flemish weavers a long stride in the path we have since trodden. England in 1330 grew wool for export, but wove no cloth the rich would wear, nor sent one yard of it abroad. And it needed something of the spirit that fought at Cressy to conceive and carry at Westminster the Acts of 1337, for summarily throwing all England, "after Michaelmas next," on the home trade for supplies of cloth: first by prohibiting the export of wool, and secondly by forbidding any person, of whatever rank, to wear cloth of foreign make—acts too sweeping to be obeyed, yet well serving to indicate the strength, the direction, and the

* One Machan, an Englishman, has credit for this feat, A.D. 1344.

extent of the project commenced with the Flemish immigration into Bolton, five or six years before.

SITES OF THE TOWNS.

All the considerable towns of this district are on the lines of its water shed. And these unite to pour the entire natural drainage of the district into the Mersey. Ascending this river, from Liverpool, we arrive on the borders of the Manchester District, as here described, about half way between Warrington and Manchester. Here the Irwell is received on the northern bank. Entering the Irwell we ascend in a north-easterly direction to Manchester. There, turning to the north-west, and passing, on the west bank, the junction of the Tonge, a little river flowing from Bolton, we ascend towards Radcliffe, passing, again, on the eastern bank, the junction of the Roch, and reach, successively, Radcliffe and Bury. Returning down the Irwell to its junction with the Roch, we pass eastward up that river, first to Heywood, and then to Rochdale. Again returning down the Roch and the Irwell to Manchester, we may ascend, thence, the Medlock, an affluent of the Irwell to Oldham. And passing down from Manchester to the junction of the Mersey and Irwell, we may, by ascending the former, pass, successively, through Stockport, (where the Mersey becomes the Tame,) Hyde, Ashton-under-Lyne, and Staleybridge. I have thus enumerated eleven out of the sixteen towns. The remaining five are the smallest of the group. Three of them—Atherton, Tyldesley, and Leigh, lie together in the extreme west of the district, and being inhabited chiefly by hand-loom weavers have shared the depression which has been gradually forcing that form of industry out of existence. Another, Eccles, is a mere suburb of Manchester; and until the factories of Patricroft, in its immediate neighbourhood, were established, was a suburb of residences for the rich rather than of industry for the poor. And the last, Middleton, a small factory town, formed around what was originally a rural village in a fertile vale, with a few hand-loom weavers, evidently owes its growth, such as it is, to the means of communication established for the use of the surrounding towns.

It will be observed that the use of water power must have rapidly given to several of these towns manufacturing advantages not possessed by Bolton. And amongst these Manchester soon took the lead, as being not only well endowed in this respect, but so placed in the valley of the

Mersey as to have the shortest and easiest communication with the port whence all drew their raw material, and to which the greater part of their exportable produce was sent.

The use of steam power has not disturbed the pre-eminence of Manchester. All these towns are by nature about equally well supplied with coal. And the canals first, and afterwards the railways, following most easily, as well as most profitably, the lines of most gradual ascent from the coast, have taken the general direction alike of the natural water shed and of the principal lines of road.

The district as above described, is bounded on the east by the scattered and devious, but tolerably central, line of hills running north and south through the greater part of England; and on the north by a straggling off-set from that line of hills running westward. In the nook formed by the junction of these two lines geology harmonises with commerce. There is here a depression great enough to permit the easy passage of a canal, joining the Mersey of Lancashire and Cheshire with the Calder of Yorkshire; and so achieving one of the most remarkable results of the canal-mania which distinguished the days of our grandfathers, somewhat as the railway-mania has marked our own.

All the ground in the district north of Manchester is more or less hilly. South of Manchester the land is low; and extensive mosses or peat bogs occupy a portion of the valley of the Mersey.

If a line be drawn through the centre of Manchester, due north and south, and crossed with another drawn due east and west, it will be observed that Rochdale is the most northernly town in the district, and that it is one of four lying in the north-east section of the figure so described; the other three being Heywood, Middleton, and Oldham. Two more, Ashton and Staleybridge, may be said to be due east of Manchester, both within five miles of it, and so near together that they may, for most purposes, be deemed one town.

Hyde and Stockport fall into the south-eastern section.

In the south-western section there is no town, the ground consisting of extensive and low-lying flats, on the banks of the Mersey and Irwell.

The north-western section is in some respects the most remarkable. It includes seven of the fifteen subsidiary towns. A line drawn from the

centre of Manchester, in a due north-west direction, would pass, very nearly, through the centre of Bolton, the largest of the seven, and, after Manchester, the largest town in the district. Excepting Rochdale (which owes a part of its growth to Yorkshire influences, as felt through the dip in Blackstone Edge), Bolton is also further from Manchester than any other considerable town in the district.

MATERIALS—WHENCE AND HOW OBTAINED.

I have said that the area of this district is about 222,500 acres ; that its aggregate population in 1801 was 311,544 persons; and that in 1851 this number had risen to 1,044,816. These figures have been obtained by selecting from the census of 1851 the area and population of each of the townships and parishes comprised in the district, as above described, and where a part only of a township or parish could be taken as within the district, the area and population of the part excluded was carefully estimated with regard to all the data afforded, not only by that census, but also by each of the five preceding. The population of each of these separate areas, in 1851, was obtained, as to 56 places, not forming part of any town, directly from the census of 1801. As to 27 similar places, it could be obtained only by estimate ; so many (1) falling partly out of the district, or (2) not having been separately dealt with for the census of 1801, or (3) evidently falling wholly or partly within one of the sixteen towns.

The area taken is in all cases that of the land not usually under water.

The area and population of each of the sixteen towns was obtained for 1801 and 1851, by a careful consideration of the materials afforded by the censuses, and of the local circumstances and character of each town.

Appended to this paper is a table, containing the principal results for each registration district, town and country. The whole of the detailed calculations and estimates involved in the production of this table were the work of my friend (and a fellow member of the Historic Society), Mr. T. A. Welton, of Fenchurch Street, London ; and I have much pleasure in acknowledging that the Society is indebted rather to that gentleman than to myself, for the greater part of the figures on which the present paper is based.

DETAILS.

I have said that I find in the district, as described in the census of 1851, sixteen towns. These are :—

Names.	Area, 1851.	Population.		Increase per cent.	Density ℔ acre in 1851.
	Acres.	1801.	1851.		
Manchester.....	9785	94409	404808	329	41.37
Oldham.....	2317	9024	46820	419	20.21
Stockport.....	2155	18880	53610	184	24.88
Bolton.....	1820	17429	60711	248	33.36
Ashton-under-Lyne	1525	4837	40723	742	26.70
Bury.....	1470	6852	27762	305	18.89
Stalybridge.....	1240	1500	23877	1492	19.25
Rochdale.....	1130	8500	29195	243	25.83
Heywood.....	750	2800	12194	335	16.26
Hyde.....	650	863	10050	1065	15.46
Middleton.....	400	1765	5740	225	14.35
Leigh.....	385	700	5206	644	13.52
Radcliffe.....	363	1847	5002	171	13.78
Eccles.....	325	2000	4108	105	12.64
Tyldesley.....	280	1809	3608	99	12.89
Atherton.....	250	2109	2780	32	11.12
Totals....	24845	175324	736195	320	29.63

Here the towns are arranged in the order indicated by the extent of the area occupied by each in 1851. It will be observed that this order coincides but roughly with that of the population at the same date, and scarcely in any degree with any other of the several variations exhibited.

Manchester, the largest town, whether measured by area or by population, and also the most densely peopled, is at the top of the list; and Atherton, the smallest, measured either way, and the least densely peopled, is at the bottom. But between these extremes, as may be seen at a glance, are wide variations of nearly every element brought to view.

The towns whose population has increased most rapidly during the fifty years in view are, very obviously, those in the valley of the Tame—Staleybridge, Hyde, and Ashton. But these are far from showing an uniform rate of increase. Staleybridge has increased 1,492 per cent., Hyde 1,065, and Ashton 742. And they have different densities:—19, 15, and 26 persons per acre. The significance of these differences is to be determined only by local investigation.

To make up the entire district, there are to be added 91 country town-

ships or parishes, or parts of these, which if added, in the aggregate, to the above table, make the whole area of the district 222,576 acres, its population in 1801—311,544; and in 1851—1,044,816. The increase in 50 years, in the whole district, having been 235 per cent.

The country districts, taken alone, have an area of 197,731 acres—or about eight times that of the towns. Their population was 136,220 in 1801; and 308,621 in 1851. In other words, at the beginning of the century, the town population of the district was to the whole as about five to nine. In 1851 the proportion was as rather more than seven to ten.

Taken by themselves, the country districts have increased their population in the last fifty years faster than the average of England, town and country together; but their rate of increase has been much behind that of the towns.

But this, it will be borne in mind, relates only to the entire fifty years, taken as a single period. If the rates of increase be examined for every ten years, it is found that, as a rule, all the towns were growing most rapidly between 1821 and 1831; and that in the country districts the period of most rapid growth was 1801 to 1811, and the period of slowest growth 1841 to 1851. The present paper has reference only to the aggregate period 1801-51; and its results may therefore in some cases not harmonise with those of observation confined to a part of that period.

The tables at the end of the paper exhibit the whole district divided into seven groups of towns and their surrounding country districts.

In the first group, the towns of Manchester and Eccles, with a population of 473,366 are surrounded by twenty-one country districts, with a population of 64,450, or less than one-seventh. The most densely peopled part of the surrounding country is about Openshaw, Droylsden, Newton, and Failsworth; and these also are the places of most rapid increase during the fifty years. The parts least densely peopled are about Urmstone, Stretford, Chorlton-cum-Hardy and Withington; at Moston; and at Barton-on-Irwell.

In the Bolton group, there are one town and eighteen country districts—the respective populations being 60,711 and 39,450. Here the proportion of country population is nearly two-fifths of the whole. In the Manchester group it is little more than one-eighth. There are, however, some parts of

the country about Bolton, as Kersley and Farnworth, more densely peopled than any similar district near Manchester. On the whole, the Bolton district is thickly inhabited; the only exceptions being at Over Hulton and Bradshaw, which do not include more than about one-tenth of the whole area.

In the group formed by Rochdale, Heywood, Bury and Radcliffe, and the sixteen country districts surrounding these, there is an aggregate town population of 74,153, against a country population of 83,821. Here there are one-ninth more persons in the country than in the towns. Some parts of the country, as Pilsworth and Ashworth, are but thinly peopled—having even lost instead of gained in that respect, since 1801. The rest of the country is well peopled.

In the Oldham and Middleton group, with two towns and twelve country districts, we have 52,560 persons in the towns and 54,552 in the country. The country about Royton is densely peopled; and about Tonge it is so much so as to suggest the existence of something very like a town. At Great Heaton there were fewer inhabitants in 1851 than in 1801; and the population is but thinly distributed over the townships of Alkington, Hopwood, and Thornham.

Stockport gives to its group a town population of 53,610 surrounded by ten country districts containing 14,135 persons. Here the country parts are, on an average, more thinly peopled than anywhere else in "the Manchester District." The inhabitants are fewest about Chadkirk and Brinnington, South Stockport, towards Bramhall, and about Offerton.

The Tame valley group, including Ashton, Staleybridge, and Hyde, and nine country districts, has in the three towns 74,651 persons, and in the country 40,148. This, as I have before observed, is the group of most rapid increase; the town population having increased tenfold, and the country population much more than doubled itself, in the fifty years in view.

The last group is one that might, perhaps, have been omitted, without impairing the completeness of "the Manchester District." Its towns are Leigh, Tyldesley and Atherton, having, in 1851, an aggregate population of 11,594. Around these are five country districts, containing a population

of 12,165. And as the latter are well, and nearly equally, inhabited, and the density of the town population is low, the general aspect of the group is much that of a densely peopled country district.

How the increase of population here shewn has been effected, is a question of some interest. Not by natural increase only, but also largely by immigration—by immigration from all parts of the United Kingdom, but chiefly from Ireland, and from the counties immediately adjoining. No attempt, space being deficient, can here be made to follow out this enquiry. But it may fitly form the subject of another paper.

The area before us is not of large extent, as compared with England and Wales. It is but as 222,000 acres to 35,000,000 (dry land), or as about 1 to 165. Yet its population is as 1 to 18.

The capital accumulated on the same ground probably now bears a much higher proportion to the number of persons using and enjoying it, than it did in 1801. And there is reason to believe, that if it has not all been actually saved on the spot, the amount imported from other localities has been more than balanced by that carried away.

The inducements under which men gather themselves together in this manner are various; but there can be no doubt that in the present age of the world the motive by far the most powerful is the industrial one; and that, as to the majority in number of the population so collected, it has been so in all ages of the world. It is a trite remark, that every successive step in civilization has been broadly marked by the additional power it has conferred upon men to live near each other. The hunter must needs have few near him; the herdsman cannot have many; and the farmer, with all modern improvements in agriculture, cannot on an average, raise the means of subsistence for more than one person to every five acres of cultivable land. In England and Wales there are nearly four acres of absolute area to each living person; but much of this is not, and never can be made cultivable. Yet all subsist; and many subsist in a style which necessitates the consumption of much capital and labour in forms not in any way conducive to the means of subsistence. We have in Great Britain, living in that degree of aggregation which is wholly inconsistent with agricultural industry, a proportion of our population, probably not less than four times as great as is similarly

placed on any like area in Europe, or in the world, though there are several extensive areas of similar character; and the explanation is nowhere more obvious than in the life of the Manchester district. We are doing the "town-population" work of more than half the world, in addition to our own. We are finding the capital and labour, and taking the profits of this town industry. And we are also wielding the power, social and political, and incurring the corresponding responsibilities of this position. Our towns, for any merely British purpose, are enormously in excess. Our country districts are, for the most necessary and imperative of British purposes, equally deficient. Our very being as a nation has come at length to hang upon the means of communication with those "country districts" abroad, in which the consumers of our exported produce live, and from the soil of which they raise the means of paying for what of ours they consume. Very well known is all this, but yet not always sufficiently remembered. And if in thus analysing, and casting into a new form, for a local purpose, a portion of the statistical material presented to us by the census of 1851, I shall have induced any additional attention to the phenomena now unfolding themselves in the growth of our town-population, I am quite sure that I shall have done good service.

TABLE I.

MANCHESTER DISTRICT.

TWENTY-ONE COUNTRY DISTRICTS AROUND THE TOWN OF MANCHESTER.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Urmstone	974	532	730	198	—	37	350	480	130
Stretford (pt.)	2,790	1,177	*2,498	1,321	—	112	270	573	303
Chorlton-cum-Hardy	1,265	513	761	248	—	48	260	385	125
Withington	2,498	743	1,492	749	—	101	190	382	192
Levenshulme	605	628	1,902	1,274	—	203	664	2,012	1,348
Rusholme (pt.)	*356	300	1,200	900	—	300	539	3,157	1,618
Gorton	1,429	1,127	4,476	3,349	—	297	505	2,005	1,500
Openshaw (pt.)	*321	189	1,259	1,070	—	566	377	2,510	2,133
Droylsden	1,611	1,552	6,280	4,728	—	305	617	2,495	1,878
Newton (pt.)	*735	*495	3,001	2,506	—	506	431	2,613	2,182
Failsworth	1,064	2,622	4,433	1,811	—	69	1,577	2,666	1,089
Moston	1,271	618	904	286	—	46	311	455	144
Blackley	1,764	2,361	3,503	1,142	—	48	857	1,271	414
Crumpsall (pt.)	*508	*300	*750	450	—	150	378	945	567
Prestwich	1,906	1,811	4,096	2,285	—	126	608	1,375	767
Broughton (pt.)	*360	*250	*1,000	750	—	300	444	1,778	1,334
Pendleton	*1,000	*900	*3,000	2,100	—	233	576	1,920	1,344
Pendlebury	930	437	2,750	2,313	—	528	301	1,892	1,591
Clifton	820	812	1,647	835	—	103	634	1,285	651
Worsley	6,240	5,062	10,189	5,127	—	101	519	1,045	526
Barton-on-Irwell (pt.)	*10,205	*4,197	*8,579	4,382	—	104	263	538	275
	38,648	26,626	64,450	37,824			Density ℔ Acre.		
Town of Manchester	9,785	94,409	404,808	310,399	—	329	9.68	41.37	31.72
	48,433	121,035	469,258	348,223					
Town of Eccles	325	2,000	4,108	2,108	—	105	6.16	12.64	6.48
	48,758	123,035	473,366	350,331					

* Estimated.

TABLE II.

EIGHTEEN COUNTRY DISTRICTS SURROUNDING BOLTON.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Over Hulton	1,300	619	452	—	167	—27	305	222	—83
Little Hulton	1,470	1,498	3,184	1,686	—	113	652	1,386	734
Middle Hulton	1,280	819	888	69	—	8	410	444	34
Kersley	900	1,082	4,236	3,154	—	291	769	3,012	2,243
Farnworth	1,450	1,439	6,389	4,950	—	344	635	2,820	2,185
Great Lever	770	398	713	316	—	79	331	593	262
Rumworth	1,300	700	1,386	686	—	98	345	682	337
Halliwell	2,320	1,385	3,959	2,574	—	186	382	1,092	710
Little Bolton (pt.)	*600	*187	580	393	—	210	199	619	420
Sharples	3,920	873	3,904	3,031	—	347	143	637	494
Bradshaw	1,380	380	853	473	—	124	176	396	220
Harwood	1,100	1,281	2,057	776	—	61	745	1,197	452
Ainsworth	1,296	1,240	1,781	541	—	44	612	880	268
Breightmet	970	734	1,540	806	—	110	484	1,016	532
Tonge and Haulgh (pt.)	*880	*958	*1,926	968	—	101	697	1,401	704
Darcy Lever	540	589	2,091	1,502	—	255	698	2,478	1,780
Little Lever (chap.)	1,020	1,276	3,511	2,235	—	175	801	2,203	1,402
	22,496	15,458	39,450	24,159			Density ℔ Acre.		
Town of Bolton	1,820	17,429	60,711	43,282	—	248	9.58	33.36	23.78
	24,316	32,887	100,161	67,441					

* Estimated.

TABLE III.

SIXTEEN COUNTRY DISTRICTS SURROUNDING ROCHDALE, HEYWOOD, BURY, AND RADCLIFFE.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Castleton (pt.) ..... Butterworth ..... Spotland (pt.) ..... Wardleworth ..... Wuerdle with Wardle.... Blatchinworth with Calderbrook	34,210	18,077	43,320	25,243	—	140	338	810	472
Heap (pt.)	*2,184	*1,483	3,854	2,371	—	160	435	1,129	694
Pilsworth	1,478	418	373	—	45	—11	181	162	—19
Lower Tottington	5,038	4,314	10,691	6,377	—	148	548	1,358	810
Elton (pt.)	*2,171	*1,800	*3,500	1,700	—	94	531	1,032	501
Pilkington	5,378	5 786	12,863	7,077	—	122	689	1,531	842
Radcliffe (pt.) (P).....	*2,103	*650	1,291	641	—	99	198	393	195
Bury	*1,250	*500	1,000	500	—	100	256	512	256
Walmerston-cum-Shuttle-worth.....	5,056	2,166	4,802	2,636	—	122	274	608	334
Ashworth	1,022	295	277	—	18	—6	185	173	—12
Birtle-cum-Bamford	1,388	753	1,850	1,097	—	146	347	853	506
Country.....	61,278	36,242	83,821	47,642			Density ℔ Acre.		
TOWNS.									
Rochdale.....	1,130	8,500	29,195	20,695	—	243	7.52	25.83	18.31
Heywood.....	750	2,800	12,194	9,394	—	335	3.73	16.26	12 53
Bury.....	1,470	6,852	27,762	20,910	—	305	4.66	18.89	14.23
Radcliffe	363	1,847	5,002	3,155	—	171	5.09	13.78	8.69
Towns	3,713	19,999	74,153	54,154					
Total	64,991	56,241	157,974	101,796					

*Estimated.

TABLE IV.

TWELVE COUNTRY DISTRICTS SURROUNDING OLDHAM AND MIDDLETON.

	Area.	Population.		Alteration.			Density ℔ sq. ml		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Crompton	2,864	3,482	6,375	2,893	—	83	778	1,425	647
Royton	1,352	2,719	6,974	4,255	—	156	1,287	3,301	2,014
Oldham (pt.)	*2,300	*3,000	*6,000	*3,000	—	100	835	1,670	835
Saddleworth	18,280	13,665	17,799	7,134	—	67	373	623	250
Alkrington	788	319	373	54	—	17	259	303	44
*Great Heaton	866	267	150	—	117	—44	197	111	—86
Little Heaton	509	494	800	306	—	62	621	1,006	385
Middleton (pt.)	*1,508	1,500	2,977	1,477	—	98	637	1,263	626
Tonge	367	711	3,831	3,120	—	439	1,240	6,681	5,441
Hopwood	2,043	948	1,575	627	—	66	297	493	196
Thornham	1,998	674	1,510	836	—	124	216	484	268
Chadderton	2,978	3,452	6,188	2,736	—	79	742	1,330	588
Country	35,853	28,231	54,552	26,438			Density ℔ Acre.		
TOWNS.									
Oldham	2,317	9,024	46,820	37,796	—	419	3.89	20.21	16.32
Middleton	400	1,765	5,740	3,975	—	225	4.41	14.35	9.94
Towns	2,717	10,789	52,560	41,771					
Total	38,570	29,020	107,112	94,609					

* Estimated.

TABLE V.

TEN COUNTRY DISTRICTS SURROUNDING STOCKPORT.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Burnage	658	383	563	180	—	47	373	548	175
Didsbury	1,527	619	1,449	830	—	134	259	607	348
Heaton Norris (pt.)	*1,583	*1,068	2,037	969	—	91	432	824	392
Reddish	1,541	456	1,218	762	—	167	189	506	317
Wernith	1,560	1,152	3,635	2,483	—	216	473	1,491	1,018
Romiley (or Chadkirk)	2,290	825	1,364	539	—	65	231	381	150
Bredbury	2,521	1,358	2,991	1,633	—	120	345	759	414
Brinnington (pt.)	*683	*140	301	61	—	40	131	188	57
Stockport (pt.)	*500	*150	*225	75	—	50	192	288	96
Offerton	730	351	352	1	—	0	308	309	1
	13,593	6,502	14,135	7,533			Density ℔ Acre.		
Town of Stockport	2,155	18,880	53,613	34,730	—	184	8.76	24.88	16.12
Total	15,748	25,382	67,745	42,263					

* Estimated.

TABLE VI.

NINE COUNTRY DISTRICTS SURROUNDING ASHTON-UNDER-LYNE, STALEYBRIDGE, AND HYDE.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Ashton-under-Lyne (part of Parish)	*7,675	*10,832	20,356	9,524	—	88	903	1,697	794
Staley (T.)	*2,520	*955	*1,800	845	—	88	243	457	214
Dukinfield	*790	*300	1,200	900	—	300	243	972	729
Matley	700	285	252	—	33	(—12)	261	230	—31
Newton	868	1,005	7,481	6,476	—	644	741	5,516	4,775
Godley	639	270	1,353	1,083	—	401	270	1,355	1,085
Hyde (pt.)	*239	*200	1,518	1,318	—	659	536	4,065	3,529
Denton	1,647	1,362	3,146	1,784	—	131	529	1,222	693
Haughton	1,130	1,139	3,042	1,903	—	167	645	1,723	1,078
Country	16,208	16,348	40,148	23,833			Density ℔ Acre.		
The Towns of Ashton-under-Lyne	1,525	4,837	40,723	35,886	—	742	3.17	26.70	23.53
Staleybridge	1,240	1,500	23,877	22,377	—	1,492	1.21	19.25	18.04
Hyde	650	863	10,051	9,188	—	1,065	1.33	15.46	14.13
Towns	3,415	7,200	74,651	67,451					
Total	19,613	23,538	114,799	91,284					

* Estimated.

TABLE VII.

FIVE COUNTRY DISTRICTS SURROUNDING LEIGH, TYLDESLEY, AND ATHERTON.

	Area.	Population.		Alteration.			Density ℔ sq. ml.		
	Acres.	1801.	1851.	Inc.	Dec.	℔ ct.	1801.	1851.	Altn.
Bedford (pt.) ..... Pennington ..... West Leigh	*5,384	*4,473	*8,501	4,028	—	90	532	1,011	479
Tyldesley-cum-Shackerley (pt.).....	*2,194	1,200	1,789	589	—	49	350	522	172
Atherton (pt.)	*2,073	1,140	1,875	735	—	64	352	579	227
Country.....	9,651	6,813	12,165	5,352			Density ℔ Acre.		
Towns of									
Leigh	385	700	5,206	4,506	—	644	1.82	13.52	11.70
Tyldesley	280	1,809	3,608	1,799	—	99	6.46	12.89	6.43
Atherton	250	2,109	2,780	671	—	32	8.44	11.12	2.68
Towns	915	4,718	11,594	6,976					
Total	10,566	11,531	23,759	12,328					

* Estimated.

THE ENGLISH POOR-LAW SYSTEM, VIEWED IN RELATION TO EDUCATION AND MORALS, IN ENGLAND AND WALES.

By the Rev. Thomas Moore, M.A.,

CHAPLAIN OF THE WEST DERBY UNION.

(Read December 13th, 1856.)

The subject of the following sketch is the bearing of the English Poor-Law on the Education and Morals of the people. Its importance will appear from a variety of considerations, of which it may be sufficient to mention, the number of the pauper class, the expense of their maintenance, and the great influence for good or evil, which they may exercise on the community at large.

Number.—To shew the number, we have but to refer to the Official Returns, and we find that there were in receipt of relief—

	In-door.	Out-door.	Total.
July 1st, 1853 ..	96,420 ..	670,660 ..	767,080
Jan. 1st, 1854 ..	110,739 ..	695,387 ..	806,126

Of the above, there were under the age of 16 years—

	In-door.	Out-door.	Total.
July 1st, 1853 ..	35,911 ..	235,749 ..	271,660
Jan. 1st, 1854 ..	45,431 ..	258,747 ..	304,178

In may not be unimportant to remark, that in 1853 the in-door pauper children were nearly 37 per cent. of the in-door paupers, and the out-door pauper children above 30 per cent. of the whole out-door relief list. On the 1st of January, 1854, the in-door children were 41 per cent. and the out-door 37 per cent. of their respective totals. The children are composed in the main of two great classes—the orphans and the illegitimate. In the years 1853, 1854, they formed when taken together, 78 per cent. of the whole, as out of 35,911 in the former of those years, there were nearly 22,000 orphans and upwards of 6000 illegitimate; and in the latter

year, out of 45,431, there were upwards of 23,000 orphans and nearly 12,000 illegitimate.

Expense.—Having thus stated the numbers relieved, we next proceed to the expense of their maintenance. There was levied for poor-rates—

In 1852 .. £6,552,298
In 1853 .. £6,522,412

The expenditure in each of these years was somewhat greater.

It is instructive to compare these rates with those of 1834, the year immediately preceding the passing of the Poor-Law Amendment Act. In that year the rates were £8,338,079; and allowing for the increase of population since then, the levy for poor-rate would at the same proportion have been in 1853, £10,720,387, but it was actually only £6,522,412, or a decrease of nearly 40 per cent. This result is satisfactory, as it proves that a great saving has been effected by the introduction and working of the New Poor-Law system.

Influence of the Pauper Class.—The influence which such a large class as the pauper one exercises on the community, must be sensibly felt; and those best acquainted with the subject have stated that under the old system, crime recruited its ranks largely from the inmates; and it is only too much to be feared that modern workhouses are not altogether free from the same defect. That a great change for the better has taken place in the condition of the pauper class, by the new system, is evident to anyone who glances at the reports of the state of the poor before, or for a few years after the passing of the Act, and who contrasts their present condition with such description. As the present paper does not propose to treat the subject fully and in detail, the writer intends to confine himself to one branch of it, viz., the means employed for training the young to be useful citizens.

Adults and Children differently regarded.—The feelings with which the adult pauper and the pauper-child are regarded are very different, and rightly so. The condition of the former is regarded with suspicion; and though poverty is not a crime in itself, yet it so often arises from crime, and from controllable causes, that the pauper is looked upon as guilty of criminality to some extent; and hence severe tests are often applied to ascertain the reality of the destitution. But the orphan, the child of

destitute parents, and the illegitimate, ought to be, and are generally regarded in a different light; and self-interest, as well as reason and right feeling, point the way to a very different mode of treatment. It is not meant that all adult paupers are to be regarded in a suspicious light. It is generally the able-bodied who are so, but the old and infirm always meet with sympathy and attention.

Poor-Law; its object.—The object of the poor-law is, while it aims at relieving cases of real distress, to diminish as much as possible the pauperism of the country. This it attempts to do by detecting unworthy applicants for parochial relief, while at the same time it endeavours to de-pauperise those who have sunk into that pitiable condition from whatever cause. In England this is no easy task to accomplish, as it is at once the richest and the poorest country in the world; and while some of its people arrive at the extreme of wealth and luxury, there are others who feel an extent of hardship and distress unknown in any other country.

Workhouse Test.—To diminish pauperism by detecting unworthy applicants, is a use which is made of the workhouse. If persons can readily get parish relief, and remain at their own homes and have their freedom, they will apply for it. In such cases, the offer of the workhouse often removes the application, as in general nothing further is heard of the case. If relieving officers, whose duties are most onerous and responsible, are not careful and conscientious, cases of hardship may occur in really deserving cases, where a little temporary relief would remove the distress, whereas the offer of the house would, if accepted, make paupers of those who never desired to be so.

Pauper Children.—The children may be divided into two classes—the in-door and out-door relief list. From what has been already stated, it will be seen that there is a great disparity between them, the numbers being in 1854, 45,431 and 258,747 respectively. From this it is seen that about 15 per cent. only of the pauper children are maintained in the workhouse.

Education.—For the educational purposes connected with workhouses, England and Wales are divided into five districts, viz., the Metropolitan, the Southern, the Eastern and Midland, the Northern and the Western including Wales, and over each of these there is a Government Educational Inspector. In the case of children, the problem to be solved, is to

give them such training as will fit them for the active duties of life, and make them useful citizens—in a word, to raise them permanently from the pauper class. Anything which falls short of this is comparatively thrown away; as those who have not been fitted for honest occupations, will soon find those who will indoctrinate them in pursuits congenial to man's evil and degrading propensities, and make them the pest of society.

Schools.—For the training of the children, there are schools attached to most workhouses, and the necessary officers to take charge of them. The law provides that every child shall have three hours' instruction daily, and the remainder is supposed to be given up to industrial occupations of various kinds. Wherever land is attached to workhouses and is cultivated by the boys, it is found beneficial in its influence on health and character.

Industrial Schools.—Another plan has been much approved of, and has been adopted in the Metropolitan and Northern districts chiefly, and with marked advantages. I refer to District, or as they are sometimes called, Industrial Schools. In these the children are entirely removed from the adults, and the whole establishment is devoted to the training of the young. District Schools are usually intended for the education of the children of several parochial unions, but sometimes a single parish has one of its own. Of the latter Liverpool is an example; and of the former Swinton, which is intended for Manchester, Bury, Rochdale, Barton and Prestwich.

Teachers.—The Committee of Council on Education have devoted particular attention to the improvement of workhouse teachers, and pays their salaries according to their merits. Boards of Guardians are thus induced to have properly qualified teachers; whereas, had the various Unions to pay the teachers, it is quite clear that the education in most cases would be greatly neglected.

School Books.—Workhouse schools have a great advantage in being able to obtain grants of books at a cost much more moderate than is practicable for National Schools, and hence there is every inducement to have the schools well supplied with the best class of school books.

Chaplain.—It it further provided that the schools be catechised monthly by the Chaplain; and in those Unions which have a Chaplain who undertakes no other clerical duty, it is expected that the Schools should have his special attention.

Results.—The machinery at work for the improvement of the pauper children, as thus slightly sketched, seems capable of producing the very best results, and without doubt it has been productive of great benefits. But to any one at all familiar with the subject practically, or who has paid any attention to the Poor Law Reports, it will be evident that the results are by no means commensurate with the machinery employed.

I shall now endeavour to put before you the reasons why schools in workhouses have not been so successful as might have been expected.

Want of Success.—1. *In the first place, the system has not been adequately carried out.* It has been stated above that there were only 15 per cent. of pauper children brought up in the workhouses. The mass of pauperism is thus untouched; and were even the greatest success to be obtained with those who are maintained in the workhouses, but a small portion of the proposed object would be accomplished. The expense of in-door relief of all the poor, adults and children, was for the year ending March 25, 1853, £762,718, while the out-door relief was £2,775,556. The great disproportion in the amount of the out-door relief is caused by the want of workhouse accommodation. It is impossible therefore to offer the workhouse to the bulk of the applicants, in order to distinguish real from pretended distress, and much expense is often incurred through this inability. It is to be feared that the majority of the out-door children are greatly neglected. In some cases, the Guardians endeavour to make the sending of their children to school, the condition of granting the relief. If this rule were invariably acted upon, much advantage would result; but from the character of those who in general are thrown upon the parish, it is not to be expected that the education and correct training of their children would be a primary or even a prominent object; and it is far more likely that the condition, where it is attempted to be imposed, is evaded rather than conscientiously carried out. Even when accommodation is provided for the education of children, it is not always taken advantage of. A striking instance of this is the following:—Swinton is a large Industrial School, built for the use of several Unions, already mentioned, and yet in 1852 (and the numbers in the later returns have diminished, except in the cases of Barton and Manchester),

Bury sent	only	71	out of	88,797	population
Rochdale	„	37	„	72,522	„
Barton	„	81	„	31,584	„
Prestwich	„	14	„	41,448	„

Of these Barton, which happens to be the nearest to Swinton, educates 1 in 1000, whereas Prestwich sends scarcely more than 1 in 3000. If Rochdale equalled Manchester in population, it would educate at its present rate only 95, whereas Manchester had at Swinton 637, exclusive of those educated in the Manchester workhouse. Manchester, when compared with these other Unions, does its duty well, and yet altogether it educates considerably less than 1 in 200 of the population.* It is surprising, however, that men so enlightened should permit the children who are retained in the workhouse, to be under the management of their fellow paupers, when competent teachers could be obtained, with the help of government, at so slight an expense. The Select Vestry of Liverpool educate somewhat more than 1 in 200, and stand at the head of pauper education, at least in the Northern District. It is laid down by competent authority, that every Board of Guardians in the country should educate *one per cent.* of the population to produce a sensible effect on pauperism and crime. If this be a fair proportion to take, it is evident, from the instances adduced, that even in the most favorable cases which can be selected, scarcely more than one-half are under proper training. The difference between Manchester and Rochdale which is so striking, and that, too, in populations so nearly alike in character, is accounted for by the fact that at Rochdale there is very little workhouse accommodation, and hence the number receiving in-door relief is small.

2. *In the second place, it will be well to enquire how far education in workhouses secures the desired end.* Workhouses are intended for several classes of inmates, and ought to be so constructed as to admit of a good classification in order to keep the vicious from the virtuous. But the houses, in which anything like a sufficient classification exists, are few indeed. We may divide inmates into three general classes:—(1) Those not able-bodied, i.e. old and infirm. (2) The able-bodied. (3) The children. It is in the able-bodied class of men and women that the greatest necessity

* These facts are derived from the Reports of T. B. Browne, Esq., her Majesty's Inspector of Workhouse Schools for the Northern District.

arises for a proper classification, and where the greatest difficulty is found in obtaining it. In the able-bodied class you have the boy of 16 and the various stages of manhood; and similarly with the females. The generality of this class is decidedly vicious and depraved in its habits. Their evil influence in a workhouse is felt in many ways, of which the following are examples. When, as sometimes happens, boys or girls have not been provided with situations before the age at which school education terminates, they are removed into the able-bodied class. They there meet with such contamination that in many cases the ruin of such persons can be distinctly traced to such intimacies. If, again, boys or girls who have been put in situations, become temporarily unable from sickness to remain at their employments, they return to the workhouse, and when recovered, they are exposed to the most imminent danger, if there is any delay in providing them with fresh situations. The society into which they are thrown consists of those who are familiar with crime, and to whom a prison is a sort of second home. On the female side is to be found the fallen woman, and those who come to give birth to illegitimate children.

In well regulated workhouses, the children are separated from the adults. But even when the principle of classification is carried out most strictly, the evil is not fully met or remedied. As long as they are in the same building, stone walls, or the utmost vigilance on the part of officers, will not keep them separate. But more prejudicial than all is, I consider, the low state of moral feeling in a workhouse. The thoroughly pauper element is too strong, and influences everything. The daily communication between parents and children, which the law provides for, leads frequently to much mischief, for the truth cannot be disguised, that the less such parents see their children, the better. Masters of workhouses complain much of irregularities in discipline to which it gives rise, and the teachers have ascribed the origin of much evil in the children, to this cause. Pauper children are more affected by the sayings and doings of their own class than by the influence of a superior one. The vicious deeds and habits of the inmates become known and are talked of by the boys and girls; familiarity with crime is the result, and a disposition to remain contentedly in a pauper condition. Boys and girls put out to situations often make excuses to return to what they consider their home, or take advantage of the first difficulty, and leave their places. Workhouse children are more

liable, perhaps, than others to be found fault with by their mistresses, as they are less accustomed to household matters, and they will not bear rebuke, and hence return to the place where they have been brought up. Besides, it sometimes happens that intimacies made in the workhouse with the regular inmates are so strong in their influence, that excuses are eagerly sought for to return again. Hence it is seen that a feeling of independence has not been produced, but that rather the pauper feeling is made deep and lasting. If the tone of feeling be low in a school, and decidedly in favour of pauperism, however energetic the teachers and other officers may prove themselves, and however well qualified for their posts, their efforts will be to a considerable extent inappreciable. The important influence of the general tone of feeling in a school, is seen in the remarkable example of the Rugby School under Dr. Arnold; and what was true in that case, will, I think, be found to prove universally true.

3. *A third difficulty is the position of the Schoolmaster in Union Schools.* —His position is peculiar. He is not merely a teacher, as is the case with National Schoolmasters, but he finds he has other laborious and often irksome duties to discharge. The children are constantly under his care, and from six a.m. to eight p.m. he has scarcely a moment he can call his own. He has to see to the cleanliness of the children and of the schoolroom, take charge of their clothing, give it out weekly and see that it is returned. Self-improvement is nearly out of the question. But it is not merely the laborious nature of his duties which makes his situation disagreeable, but also his position with regard to the Master of the workhouse. This latter circumstance does not necessarily produce unpleasantnesss, but it has done so, in so many cases, that it cannot be omitted from the number of the Teacher's difficulties. The Master is responsible for the good management of the entire house. To the Schoolmaster is confided the childrens' department; and unhappily the never-ending complaint is, that these two officers are on bad terms. Though it cannot be supposed that the Teacher is without fault, yet such differences have been almost invariably ascribed to improper and uncourteous interference on the part of the Master; and such conduct is accounted for by the fact that Masters' situations are in general not such as to secure men of good standing or proper qualification. There is no officer who can exercise so great an influence on the well-being of the house as the Master. His salary should

be good, and men of mark should be selected for the office. Were this the case we would hear of fewer complaints. This evil is remarkably illustrated by the case of Kneller Hall. By a Minute dated 21st December, 1846, a scheme was embodied for "Normal Schools for Training [School] Masters for Workhouse and Penal Schools," and as a part of this, Kneller Hall was established. But after the experiment of a few years, it has been closed. The chief difficulty was to meet the peculiar requirements of workhouse teachers, of whose duties teaching forms but a part. The Kneller Hall men were sent out prepared in the best manner, and were naturally proud of their acquirements, but they had no preparation for that portion of a workhouse teacher's duty which is peculiar to him, and hence discontent was the natural and necessary consequence, and the establishment had to be given up.

4. *Incompetent Teachers.*—Another difficulty is when the salary is small, and only incompetent persons are induced to become candidates. From these and other causes the fluctuation of Teachers is very great, and the consequences are always most injurious. It is only when the Master and Teachers act in harmony, and when the Teachers remain for any length of time, that Schools can make healthy progress ; and it is precisely in such cases, and in no other, that the Government Inspector gives a favorable report.

5. *Discouragement of Teachers.*—Workhouse Teachers have fewer encouragements than any other. As a rule, the Guardians are so occupied with relief and the general business of the Union, that they take little practical interest in the Schools. The Teacher's work is little noticed, and it is possible that however zealous and conscientious he may be, the minds of the Guardians may receive a wrong bias towards him. He is not, however, without encouragement; but his chief support is a strong sense of duty, and the earnest persuasion of the importance of the position which he holds, as affecting the temporal and eternal interests and well-being of those who are committed to his trust.

6. *Another element of the want of success* is the small number of inmates in a majority of the workhouses—for it is almost as expensive to get a proper staff of officers for a small workhouse as for a large one. The condition of the small Unions is very backward, and there is scarcely an instance of a good report in such cases. Out of the 140 workhouses in

the Northern District, there are 93 where the number of boys is under 20; 23 where it is under 30; and only 21 where there are 40 boys and upwards. There are four with 100, viz., Newcastle-upon-Tyne, Liverpool, Preston and West Derby. The proportion is much the same in the other districts as in the Northern.

7. *Providing situations for the children.*—If boys and girls have not the prospect of obtaining situations when they are ready for them, the influence on the Schools is injuriously felt. They lose hope, and have nothing to stimulate them to exertion. Were this matter attended to systematically, it would tend strongly to promote exertion and a feeling of independence. In cases where Schools obtain a good character, and where there is a steady demand for boys and girls, a healthy state and tone are generally found to exist.

8. *Industrial Training defective.*—In towns this can hardly be carried out in an efficient manner, as only in-door occupations can be pursued; and in country places, where land may be had in abundance, it is generally neglected. Wherever the cultivation of land is a portion of the industrial training, a good effect is almost invariably produced.

9. *Inferior physical condition of the children.*—As you descend in the social scale man's physical and mental energies seem to degrade, and hence this inseparable concomitant of pauperism is to be added to all the other difficulties in the way of reclaiming the pauper child.

Having said so much of the difficulties and imperfections in the way of Pauper Education, it remains to say a few words as to the method by which it might be improved. I have not left myself sufficient space to enter fully into this question; and, indeed, for its full and proper discussion it would require a separate paper. From what has been already said, the nature of the remarks which I am about to make will be readily anticipated.

Suggestions.—The evil influence which workhouses are calculated to have upon the bringing up of youth has been set forth, not indeed with all the power of which the subject is capable, but still, perhaps, after a manner sufficient to shew the great necessity which exists for a complete separation of the children from the adults. The net-work of pauperism, in whose meshes children are entangled, and from which they find it next to impossible to

extricate themselves, would to a great extent be broken through; and the complete separation of children from adults could be effected at a much less expense of feeling than is generally imagined. If we remember that the orphans and illegitimate children constitute 77 per cent. of the whole, we shall see that the great bulk has no one particularly interested in looking after them. I am persuaded also that the separation of the dissolute pauper parents and their children should be *insisted on*, if the children are to be reclaimed. It is repugnant to our natural feelings to propose such separation, but experience goes to shew that unless it be adopted the work will never be effectually accomplished.

The complete separation, and the formation of District Schools would obviate most of the difficulties noticed here. The tone of the School would not then be taken from the contaminating influence of adult paupers; the position and pay of the Schoolmaster would be better, and a superior class of men would present themselves. The head of the establishment should be a man of educated and enlarged mind. The industrial training could also be fully carried out.

Suggestions illustrated.—As practical illustrations of what is here advanced, I may refer to the Kirkdale Industrial Schools and to those at Swinton. These have been productive of great good, and have raised hundreds from the pauper class to be useful and industrious members of the community. The population of a great number of Unions is so large, that they would each require such a School for the training of the whole of the pauper children. If the smaller Unions were to unite throughout the Kingdom, and to form District Schools, and if they were put under good management, the best results might be looked for. Good management is, however, as important as the formation of districts, for we have an example in Leeds of how little an Industrial School may accomplish, through bad management.

In the management of District Schools valuable hints might be derived from the family system, as practised at Mettray, for the reformation of juvenile offenders.

It would not be difficult to point out other examples, both at home and abroad, in confirmation of *the principle of separation*, the necessity of which is strongly shewn by the various facts and statements adduced in this paper. It is beginning to be more extensively acted upon, but until

it be more generally adopted and until the majority of pauper children are brought under the influence of sound education and judicious training, the results most desired will not be produced. Gradual improvement is all but certain, for the cause of education will not in the present day be lost sight of; and the prominence which it has attained is no more than its importance demands. But though educational subjects have been much discussed, and the instruction in schools much improved in consequence, we are yet far from that degree of excellence at which it is quite possible to arrive. It is earnestly to be hoped that England will not rest satisfied till she secures the first place among the nations in the training of her labouring population, and in the enlightened treatment of her poor.

Workhouses may be improved.—Even without resorting to District Schools, the condition of workhouses might be materially improved. This could be accomplished by raising the standard of workhouse Masters to be the same as that in prisons. If an educated and thoroughly competent person filled this important office in every case, much might be done to de-pauperise both adults and children. Attention to classification is also of great importance.

But, after all, I am persuaded that nothing would tend so effectually to do so, as THE COMPLETE SEPARATION OF THE CHILDREN FROM THE ADULTS; AND DISTRICT OR INDUSTRIAL SCHOOLS UNDER A GOOD SYSTEM OF MANAGEMENT.

ON A FUNGOID DISEASE AFFECTING THE PEAR TREE.

By Thomas Sansom, A.L.S., F.B.S.E., &c.

(Read 20th December, 1855.)

The Historic Society of Lancashire and Cheshire having lately extended its field of operations, and included under the general term "Science" all subjects connected with Botany and Natural History, I offer no apology for bringing before the members the subject of the present notice. I am induced to do so as I consider, first, that all questions relating to Natural History are acceptable; and, secondly, that when those subjects have any bearing upon the cultivation or domestic use of the vegetable kingdom, their value is greatly enhanced. In the present instance, I fear I shall not be able to throw much light on the peculiar formation I have brought under notice, but I lay before the Society the little I have been able to acquire, in the hope that it may lead to further observations, by botanists better able to investigate the subject than I am.

In the garden of Mr. Edward Higgin, at Walton Breck, near Liverpool, are several pear trees. Three of these trees have suffered from a disease, to such an extent as to render the fruit unfit for food. As the disease did not make its appearance to any extent until after the fruit was gathered, Mr. Higgin supposed his gardener had bruised the fruit in collecting it; but upon further investigation, he found such was not the case, as all the pears had been picked by hand and housed with great care. When the fruit was first gathered it appeared perfectly sound, and it was not until several days after it had been deposited in the store-room, that a change took place. It soon became apparent, however, that a large portion of the fruit of three of these trees was rapidly decaying, whilst the fruit of the other trees remained perfectly sound. Upon a more careful examination of the pears, Mr. Higgin discovered, in every one, a nucleus from which the disease appeared to spread, thus confirming him in the opinion that the decay arose from some peculiar disease, and was not accidental.

Mr. Higgin, in forwarding specimens to me for microscopical examination, states that Tree No. 1, a *Maria Louise*, is a well-grown tree four or five years old, growing against the end of his stable, on a brick wall facing nearly south. It was barren until last year, when it produced a large crop, which was gathered in October, the fruit remaining in perfection until Christmas. This year it had only thirty-nine pears, which duly ripened and were gathered in October, immediately after which, part became infected. He is not aware that any showed signs of the disease until a day or two after being placed in the store-room.

Tree No. 2. *Jalousee de Fontenoy Vendee* is a dwarf standard, growing in the open garden, (near a hotbed frame, heated by manure from the stable). It was purchased last year from Davis's Nursery, Green Lane, West Derby, and bore a large crop for so small a tree. On it, two of the pears were diseased before being gathered, and before the fruit became mellow and ripe, each pear became rotten.

Tree No. 3. *Nelis D'Hiver*, a new dwarf tree similarly purchased, also in the open garden. It bore perfectly. None of the fruit became ripe before it was diseased.

None of these trees had liquid or other manure. The garden is three years old, the soil is good loam with eighteen inches of yellow clay, and sand-stone rock below.

I have examined the fruit sent to me by Mr. Higgin, and I find it affected by a fungus, to a very considerable extent. I received some of the specimens of the *Maria Louise* apparently sound; I have therefore been able to trace the progress of the disease, and in the following observations I shall confine my remarks to this tree.

In the fruit, the disease first makes its appearance in the shape of a small thickened spot, rather darker than the natural color of the pear: this gradually becomes black and ultimately cracks. From this time a slight swelling takes place around the spot, which assumes a reddish appearance. This increases very rapidly, until the greater part of the pear is absorbed, giving the whole fruit a soft and shrivelled appearance. If a section be made through the decayed part, it is found that decomposition extends a considerable distance into the heart of the fruit, and that it is very watery in appearance. On placing a section under the microscope, the cause of this rapid decay becomes apparent, the whole of the diseased part being

FIG 1.

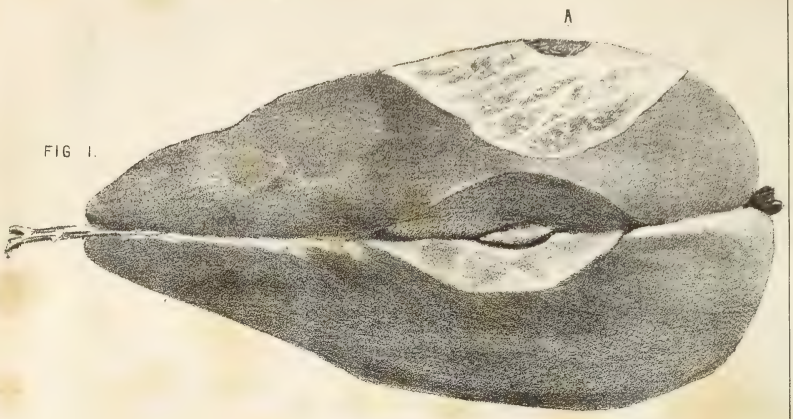
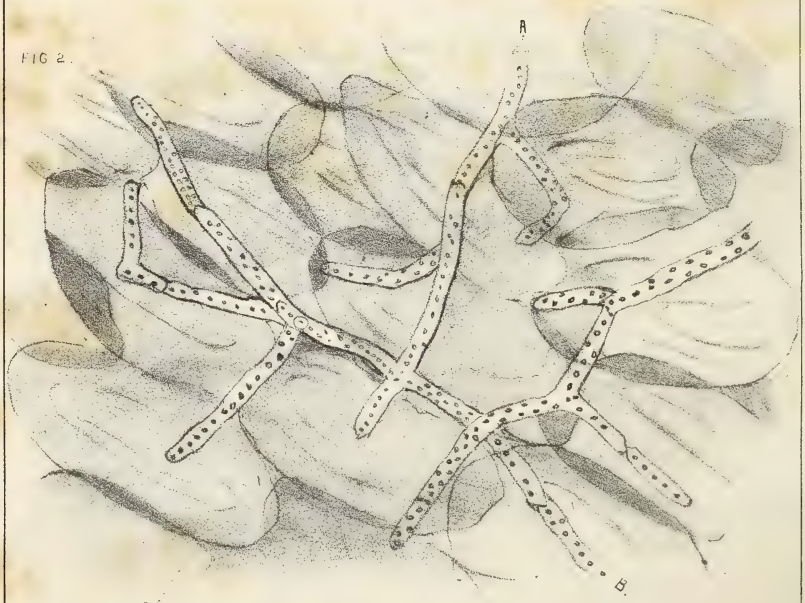


FIG 2.



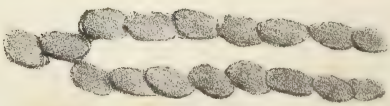


FIG 3.

FUNGUS IN PEAR.

interwoven with the filaments or mycelium of a fungus, which ramifies through the tissue in every direction, until the whole of the cellular part of the pear becomes decomposed apparently to afford nourishment to the fungus.

The mycelium consists of long and very thin filaments, frequently branched, its size varying from $\frac{1}{1000}$ to $\frac{1}{3000}$ of an inch in diameter; it is often mixed with sporidæ, which are generally much broken up or dispersed in making a section for examination, but when found entire they are ranged in long rows, and when ripe assume a dark color. The plant appears to be a species of Penicillium, or is very nearly allied to that genus.

Figure 2 represents a portion of the mycelium of the plant as seen pervading the cellular tissue of the pear. (A) the mycelium in its natural state magnified 400 diam. (B) the granular contents of the articulations, and (C) the remains of the cellular tissue of the pear.

On examination of sections made through the dark spot or eye, it would appear that this is the principal seat of the fungus, and that at this spot the plant is more fully developed, and produces fructification, as shown in figure 3.

It having been supposed that in the potatoe disease the fungus first attacks the leaf and is thus communicated to the tuber through the vessels of the plant, I have endeavoured to discover traces of this fungus in the leaves of the tree, and also in sections of the branches and roots, but without success; the disease not having been observed before the autumn, it is impossible to trace its cause with certainty so late in the season.

It appears certain that the fungi are capable of multiplying by their filamentous matter, as well as by spores. This is partly proved by the common mushroom *(Agaricus campestris)* which is commonly cultivated from what is called the spawn. This spawn consists of the filamentous matter. M. Audouin found that he could as readily inoculate caterpillars and other larvæ with minute portions of the spawn of fungi as by its spores. It is believed that there is a filamentous spawn to all fungi, although seldom seen by observers, as it is developed out of sight, under ground, in the midst of decaying matter, on which fungi generally grow, or occasionally through the substance of living matter. It would appear that for the filamentous growth darkness is necessary, and that for the growth of spores

a certain quantity of light is requisite. In the present case the bulk of the fungus consist of filamentous matter.

It is curious to observe the great similarity between the present disease and several that have lately been investigated by botanists; and a study of these may, to some extent, assist us in understanding our present subject. In the potatoe disease particularly, and also in the disease which the vines, in almost all the wine-growing countries of Europe, have fallen a prey to, fungi very nearly allied to that found in the pear form a very prominent feature, and their presence is considered by some to be the sole cause, and not the effect of the disease.

In the former disease, as you are aware, the root of the potatoe, after reaching perfection, and sometimes before, is found to be covered with spots or apparently slight abrasions of the skin. These rapidly enlarge, the tuber becomes soft, and ultimately putrefies. The Rev. M. I. Berkeley attributes this disease entirely to a fungus which he believes first attacks the leaves; and so rapid is its development, that the period for examination of its leaves is past in the course of a few hours. The fungus, in his opinion, does not live on decayed matter, but is one which produces decay and renders the plant unhealthy.* Various other causes have been assigned for this extraordinary disease, but all have appeared unsatisfactory, and the subject is still involved in mystery. Professor Balfour, after reviewing the various explanations given, both chemical and physiological, says, "the general conclusions to be drawn from all that has been said relative to the potatoe disease are that changes are induced in the cells and vessels of the potatoe by certain obscure meteorological and epidemic causes; that an attraction takes place in the cellulose and in the contents of the cells, which speedily leads to decay; that parasitic *Fungi* find a nidus in the decaying organic matter, so as to accelerate and give a character to the disease; and that as yet no remedy has been devised."

The vine disease also results from a parasitic fungus, the *Oidium Tuckeri*. The ravages of this plant, as in the former case, have entailed great distress on the inhabitants of the wine-growing countries; the crops in some districts having been entirely destroyed. As yet no certain method has been discovered to stop its increase. This, like the *Botrytis infestans*,

* In the Journal of the Horticultural Society, vol. i, page 25, Mr. Berkeley enters very elaborately into this subject.

or potatoe fungus, attacks the leaves of the vine, and spreads to the fruit. It is supposed by many that it makes its first appearance in the roots, but as yet I believe there is no proof that this is the case.

The currant is the fruit of a small grape, the *Uva Corintha.* This has also suffered much; and being so commonly used as an article of food, has made almost all classes in this country familiar with the disease, indeed it is now so common that it is with difficulty that a sample of currants can be obtained without being more or less affected with the disease. The *Oidium Tuckeri* and the *Botrytis infestans* belong to the same order of fungi as that found in the pear. The disease called dry rot is also caused by the mycelium of a fungus decomposing the tissues of the wood.

It is not in the vegetable kingdom alone that these parasites are found; the animal kingdom is also attacked by them in various forms, and man suffers to a considerable extent by them. Parasitic fungi may be found in the ringworm, thrush, and many cutaneous complaints; also in that fearful and dreaded disease cancer. The muscadine so destructive to the silkworm is caused by the growth of *Botrytis Bassiana.* It is a well ascertained fact that many of the diseases commonly called blight, are caused by the growth of parasitic fungi, and the more the microscope is used the more easily will they be traced to their proper origin.

In cases like the present, however, the most important question for consideration is, how can these diseases be eradicated? and this is a subject of no inconsiderable difficulty; for when dealing with living plants or animals, we cannot apply stringent remedies without great danger of sacrificing the life of the parent plant or animal. In Kyan's process for the prevention of dry rot, the timber is impregnated with a solution of corrosive sublimate, a most powerful poison; but what living plant or animal could be so treated? hence the great difficulty experienced in stopping the ravages of disease in such cases, for most chemicals that will kill the parasite will also kill the plant on which it grows. As this disease has so lately made its appearance, it is impossible at present to suggest a remedy. Several washes however have been tried, and it is said with some success, to stop the progress of the vine disease; and as our present disease is so similar in its nature, I would suggest a similar treatment. Mr. Quarles Harris, in his paper on the vine disease, gives the following remedies as those which have been found most efficacious; and as they

have been found not to affect the health of the plant, I would suggest them as likely to be useful in this case.

1. Mix one-half of black powdered sulphur with one-half of potash; make into a wash of the consistency of usual whitewash, and with a brush paint the stems and shoots, and rub it well into all crevices.

2. Mix one-half of common sulphur with one-half of quick lime, make into a wash as above, and apply in the same manner.

3. One pound of slack lime and one pound of black sulphur, boiled for twenty minutes in five pints of water, allowed to cool and fall bright; to be then drawn off into bottles. One pint to be mixed with 100 pints of water, and the trees well syringed with the mixture.

Mr. Higgin intends to apply the last remedy, and I have little doubt that before the next fruit season he will be able to throw additional light on the subject.

Postscript.—Since the above paper was written, I have examined the fruit of a pear tree from the neighbourhood of Maghull, which has been completely destroyed by the same disease. The fruit, when examined under the microscope, presented a similar appearance to that described in the foregoing paper.

EXPLANATION OF PLATE.

Figure 1. Section of diseased pear.
A. Decayed part affected by fungi.

Figure 2. A. The mycelium in its natural state magnified 400 diameters.
B. The granular contents of the articulations.
C. The cellular tissue of the pear.

Figure 3. Fructification.

ON THE RISE OF THE MANUFACTURING TOWNS OF LANCASHIRE AND CHESHIRE.

By David Buxton, Esq.

(Read 8th May, 1856.)

The towns of the Manchester District have already formed the subject of one of the papers brought before this Society, during the present session.* But the elaborate statement of Mr. Danson dealt almost exclusively with the statistical aspect of the subject, as exhibited in the results of the census of 1851. If I now travel over the same ground, it is in the hope of being able to group together various interesting details of a more general character; and so to afford those amongst us who are not intimately acquainted with the locality, a more complete view of the rise and extension of the manufacturing towns in the south-east of Lancashire and adjacent parts of Cheshire. These towns are sixteen in number, twelve of them being in Lancashire, and four in Cheshire. The former are Bolton, Bury, Oldham, Middleton, Rochdale, Heywood, Radcliffe, Ashton, Leigh, Atherton, Salford, and Manchester. The latter (the Cheshire towns) are Stockport, Hyde, Stalybridge, and Dukinfield. Now the relation which all the rest bear to Manchester is very peculiar, but the notice of it is by no means new. Dr. Percival, writing upon the population of Manchester in 1773, says,—"A considerable part of the manufactury of this flourishing town is carried on in the adjacent country, which is thereby crouded with houses and inhabitants."† And that which thus commenced with the first impetus to the cotton manufacture, has gone on ever since; and we shall find that all the surrounding towns are dependent upon the great central mart, as

* See "On the Area and Population of the Manchester District," by J. T. Danson, Esq., F.S.S. and V.P. of the Historic Society. Antè p. 165.

† Observations on the State of Population in Manchester, &c., p. 9, in Philosophical, Medical, and Experimental Essays, by Thomas Percival, M.D., F.R.S., F.S.A. London, 1776.

colonies are dependent upon the mother country; as children upon a parent; as the expanding and lengthening branches—or, more truly still, as transplanted offshoots—are related to the parent stem.

The proof of this involves so many points of interest, that I beg for a short time to call attention to them. But, first of all, it is very noticeable that, before the passing of the Reform Bill, not one of all the populous and wealthy towns which I have named possessed the privilege of parliamentary representation. To us, who know the influence which this district has exercised upon recent legislation, it appears scarcely credible that Manchester, and its tributary towns, should only have possessed the elective franchise during the last twenty-four years. Such, however, is the fact. Twelve borough members are now returned by such of the towns as were then enfranchised, viz., two each by Manchester, Stockport, Oldham, and Bolton: and one each by Salford (which in effect is part of Manchester), Ashton, Bury, and Rochdale. Since their enfranchisement as parliamentary boroughs, most of them have also become corporate towns; and besides the privileges which Manchester thus acquired in common with the other towns of the district, it has also been erected into an episcopal see, and has more recently, by a special exercise of royal authority, been dignified with the title of "city."

To shew that the extension of manufactures in the surrounding towns, is simply the extension of Manchester itself, it is only necessary to mention, that the cotton manufacture divides itself into several branches; and that for the proper carrying on of some of these—bleaching, and calico printing, for instance—certain local conditions are requisite, which a populous town cannot furnish. Accordingly, we find that bleaching has betaken itself to Radcliffe, Horwich, and the neighbourhood of Bolton; and the printing of calicos has found more congenial homes on this side of the Yorkshire, Cheshire, and Derbyshire boundaries,—on the banks of the various tributaries of the Mersey and the Irwell.* Even weaving sheds, built in a single story, are nestling down in country places, where land is cheaper, as any traveller between Liverpool and Manchester may see as he

* The only Print Works which occur to me as being within the town of Manchester are those carried on by Mr. Alderman Neild and others, under the well known firm of Thomas Hoyle and Sons. The establishment has been largely extended, and has been in existence as the Mayfield Print Works for a great number of years.

passes along. The heavier processes of carding and weaving can only be carried on upon the ground floor, or in the lowest stories of a building; but spinning and the lighter operations may be as well or better conducted in the upper stories. Even cotton spinning itself, however, must reach its limits in a town like Manchester, where the area is covered, and property is becoming daily of greater value. And it has done so. Old factories are sometimes enlarged, but new ones are not built *there*. They are built out in some convenient spot in the *district:* and this extension of the smaller towns is as much a sign of the expansion of Manchester proper, as the construction of docks on the north shore, or the building of residences at Aigburth or Roby, is a proof of the expansion of Liverpool. It may seem strange to say so, but the fact is, that Manchester is becoming (in proportion to the whole aggregate of production) less and less the chief *manufacturing town*, and more and more the central *mart* for the whole manufacturing district. Of the hundreds of manufacturers who throng the Manchester Exchange every Tuesday at mid-day—representatives of the wealth, and energy, and skill, which are embarked in the staple trade of the place—I doubt if more than one in ten lives, not in the town *itself*, but *anywhere* within the parliamentary boundaries of Manchester and Salford.

Take another illustration of the same fact. There are many names known far beyond the immediate locality where they were first known, and which have become bound up not only with local but with national history. All the world will tell you that the original Sir Robert Peel was a Manchester manufacturer, and that Mr. Cobden's first essay in public was as the author of a pamphlet, in which he assumed the same general designation.* Yet what are the facts? The warehouse of the Peels was in Manchester, but their works were at Bury; that of the Cobdens was also in Manchester, but their works were at Clithero. Mr. John Feilden, (who, as M.P. for Oldham, carried the *Ten Hours Act*,) had his place of business in Manchester too, but his works were at Todmorden. And there are at this moment many others whose names are extensively known in connection with the place, and with the cotton manufacture, who though they are popularly considered as belonging to Manchester, (and though some of them actually

* "England, Ireland, and America, by a Manchester Manufacturer." This publication appeared about twenty years ago.

do reside there, and all of them have their places of business in the town,) still have their works situated in various parts of the surrounding country. Thus the works of the present member for Manchester, Mr. John Bright, are at Rochdale; those of his predecessor in the representation, Mr. R. H. Greg, are at Caton, near Lancaster, and at Bollington, in Cheshire. Among the ex-mayors of the town are Sir Elkanah Armitage, and Mr. Kershaw, M.P. The works of the latter are at Stockport; and those of the former at Pendleton,—a suburb of Manchester, which is in the borough of Salford, but in the parish of Eccles. The manufactory of Mr. J. Cheetham—M.P. for this division of the county—is at Stalybridge, and that of Mr. Charles Hindley, M.P., at Dukinfield; though both are popularly considered and called "Manchester men." And not needlessly to extend the list, I will only add, that the Messrs. Grant, of Manchester, (the "Cheeryble Brothers," of *Nicholas Nickleby*,) had their works, not in the town where their warehouse is situated, but at Ramsbottom, near Bury.

Again, a borough town, or any place possessing a considerable population, or independent means of wealth, will generally be found to possess its own newspaper, and its own local bankers. Now I will venture to say, that nowhere throughout the United Kingdom (though the district round Leeds may afford a somewhat similar case) will you find such large masses of people congregated together, and so much visible wealth accumulated, with such a remarkable absence of these accompaniments, as in the tributary towns now under consideration. And why? Because the Manchester papers are the press of the district, and the bankers of the district are the banking firms or companies who conduct their business in Manchester. As regards the press, though the Manchester papers circulate through the district, and form the only issue of any account, I am not unaware that there have existed, or do exist, a few local prints in those places which return members to parliament; and where, consequently, political differences, and occasional party contests, tend to support the organs of public discussion. But the insignificance of these existing exceptions, and the ephemeral life of some which exist no more, are only corroborations of the general statement which I have just made. To test the assertion fairly, one must not look at the state of things since the repeal of the newspaper stamp, but go back to a period which shews more unexceptionably the ordinary conditions of these localities. From a publication issued in 1852,

purporting to give a list of all the newspapers published in Great Britain in the year 1850, with the number of stamps issued to each, I cannot find that there was at that time any newspaper published in Ashton, Hyde, Stalybridge, Oldham, Middleton, Rochdale, Bury, Heywood, Radcliffe, Atherton, Leigh, or Dukinfield: while in Bolton there was one paper, to which, in 1850, 72,000 stamps were issued; and in Stockport, two papers, to one of which 14,980 stamps had been appropriated, and 28,500 to the other. To the four papers published in Manchester, the issue had been, during the same period, nearly two millions, viz.—1,916,910. And if it were worth while to examine how far the question under review is illustrated by the banking system of the district, we should find that with the exception of about three private firms, four or five local Joint Stock Banks, and several branches and sub-branches of the Manchester and Liverpool District Banking Company—five towns being without any provision at all, and three more possessing only one of these branches—the whole banking business is transacted in Manchester; the firms and companies situated there being, in fact, not the bankers of the town alone, but of all the surrounding district.

I will now endeavour to point out some of the causes which either have determined the original establishment of manufacturing enterprise in these places, or have led to their rapid increase in wealth, population, and national importance. Manchester is not a new town. I need not go into its history, or investigate its date. In the reign of Henry VIII. it is spoken of as "well inhabited, and distinguished for its trade in linens and woollens;" and in an act of parliament, passed in the following reign, mention is made of "Manchester, Lancashire, and Cheshire Cottons; and of Manchester rugs and friezes." It was not until the middle of the last century that the cotton manufacture began to assume that importance which has led to the enormous increase in all the attributes of prosperity which characterise this district; and Liverpool also, as the port of the district. The importation of raw cotton into this country, which in 1701 was under two millions of pounds, and in half a century later had not increased to three millions, sprang up between 1751 and 1780 to nearly six and three quarter millions; in 1790 it reached thirty-one and a half millions; and in another ten years increased more than 75 per cent., shewing an augmentation of imports, within the century, from 1,985,868 pounds to fifty-six millions of pounds.

Simultaneous with this, was the increase in the value of the cotton goods exported; as will be seen by the following table :—

Year.	Cotton Wool Imported. lbs.	Cotton Goods Exported. Official Value
1751	2,976,610	£45,986
1764	3,870,392	£200,354
1780	6,700,000	£355,060

In seven years more, when the strenuous efforts which had been made to overthrow Arkwright's patents had been successful, the amount of exports rose immediately to the value of £1,101,457. These figures shrink, of course into insignificance by the side of the present returns; * but they indicate when it was that the first bound, in the rapid increase which is still progressing, actually took place. A glance at the table just given will show that it was about 1763 or 1764. In the former year, the seven years' war, which secured to England the possession of Canada, was brought to an end.† In the same year, the traffic between Liverpool and Manchester was carried on by a fleet of eight river flats. But this imposing line of transports did not long suffice. In the same year, the Spinning Jenny was invented. The two requisites to the developement of our local resources, which has since taken place, were first, suitable machinery, and second, readiness of communication. Both were supplied, almost simultaneously. From this point may be dated the marvellous growth of the cotton manufacture, and of local prosperity. The slow and laborious processes, which are recorded in the very name MANU-*facture*,

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*The returns of some subsequent years, and those which have been most recently published, will enable any one who is interested in the subject, to institute the comparison here suggested :—

Cotton Wool Imported.

1800.	1823.	1845
56,000,000 lbs.	187,231,520 lbs.	721,980,000 lbs.

For the first *three months* of 1855, the quantity imported was 174,695,584 lbs., and for the first *quarter* of the present year, 206,494,736 lbs. The value of the Cotton goods exported, has increased as follows : —

1834.	1835.
£13,783,375	£15,306,922

During the first *quarter* of 1855, the declared value of the manufactured Cotton goods exported, (exclusive of twist), was £6,176,520, and for the corresponding period of the present year it was £6,723,390—that for the month of March alone being £2,476,378—or nearly at the rate of thirty millions per annum.

†"The rapid increase of Manchester commenced about the year 1765, after the conclusion of the last war."—Dr. Percival: *Essays, ut supra, p.* 29.

were now superseded, and every suitable climate in the world was henceforward laid under contribution, to furnish the raw material upon which this great enterprise subsists as its natural food.* In 1760 the carding machine, invented by Lewis Paul, to be used in the woollen manufacture, was introduced into Lancashire, and applied to cotton. In 1764, calico printing was first brought into this county, though not applied with much effect, until taken up by the Peels at a later period. In 1769, Arkwright's first patent for the "water frame" spinning machine was issued; and also Watt's first patent for his discovered improvements in the steam engine. In the following year (1770), the spinning Jenny, invented by Hargreaves, was patented, though the principle had been discovered, as just stated, four or five years before. Five years later, (in 1775,) Arkwright's second patent was taken out, for his carding, drawing, and roving machines. From 1776 to 1779, Crompton was working his way to the invention of the mule spinning frame, though it scarcely came into use, until after the success of the attempts which were repeatedly made to overthrow the patents of Arkwright. This was in 1785—a year of great importance. In this year it was that Cartwright obtained the first patent for his power-loom; Boulton and Watt applied their first engine as the motive power in the cotton manufacture; and the printing of calico from cylinders was introduced. But to make these discoveries and improvements practically valuable, readiness of communication was also essential: and this was supplied simultaneously, by an extensive system of canal navigation, by means of which the raw material was brought in to be worked, and the manufactured article could be either returned to Liverpool for shipment, or forwarded to the various home markets for domestic consumption. The act for

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*The following table exhibits the various sources of supply, and their relative importance:—

Raw Cotton imported during the three months ending March 31st, 1856, and in the corresponding period of 1855.

	1856.	1855.
United States	1,590,661 cwts.	1,431,234 cwts.
Brazil	38,856 „	28,414 „
Egypt	37,527 „	23,908 „
British India	171,110 „	75,222 „
Other Parts	5,549 „	1,004 „
Total cwts.	1,843,703	1,559,782

making the Sankey and St. Helen's Canal (the first in England), had been obtained in 1755. The greater work, which we owe jointly to the energy and perseverance of the Duke of Bridgewater, and the genius of John Brindley, was authorised by Parliament in the session of 1758-9, and opened in 1762. Between 1791 and 1794, acts were obtained for the construction of separate canals from Manchester to Bury and Bolton, to Ashton and Oldham, and to Rochdale: and by means of various branches and extensions, a complete system of water communication was speedily established, not only with the towns of the immediately surrounding district, but extending into the neighbouring counties and to remoter places.* Without the facilities of transit which were thus supplied, the prosperity of manufacturers, which increased at such a rapid rate at the time now spoken of, would have been an utter impossibility. The only towns in the district which are accessible by river communication, are Stockport and Manchester, and the Irwell has been made navigable up to Manchester only by artificial means.

The circumstances which determine the locality of manufactures, will be found to resolve themselves generally into—I, Convenience of site: and II, Facility of transit. Convenience of site implies in the present instance that there shall be (1) a copious supply of water: (2) a cheap supply of coals, arising either from the proximity of the mines, or from cheapness of conveyance: (3) a suitable and sufficient population: and (4) no pre-occupying or more important business, or one more convenient to be carried on in that locality.† The principle which governs these matters is not that of local exigency, (or we should have manufactories in every populous town) but of local convenience. And we may see on every side how natural is the tendency, in all the more extensive forms of

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*It is estimated that the canals now open in England, are 2800 miles in length; and that we have also 2500 miles of navigable rivers, which have been partly made so by artificial means.

†When we consider how the maritime trade of Liverpool has swallowed up every other, and driven out, as if they had no right to a footing within its borders, the manufacture of pottery, and the craft of watchmaking; and that, in rebuilding the only cotton factory ever erected here, it has been turned into a flour mill,—it is evident that this last consideration is a very important one. The attempts which have also been made in other places, e.g., at Hull, Bristol, and elsewhere, to introduce the cotton and other manufactures, (and which, if they have not failed entirely, have certainly not sufficiently encouraged the experiment to warrant its extension,) are additional evidence to the same effect.

manufacturing enterprise, to fix themselves, and to spread out, in some convenient locality. Thus the cotton manufacture is chiefly carried on in and around Manchester; the broad cloth trade is in that district of the country which is popularly known, in this very connection, as "The West of England;" the coarser and heavier woollen fabrics are made in the West Riding of Yorkshire; the principal iron works are in those parts of the counties of Stafford and Worcester, which are known as the "black country;" the making of earthenware has acquired for a neighbouring district the name of "the Potteries;" and the smelting of copper and other ores is peculiar to Glamorganshire. The presence of minerals does of necessity fix a certain amount of industry to the spot where they must be worked; but the genius of manufactures is more erratic. She may and does wander about to find the likeliest spot to settle in, but when it is found, it becomes the ample home of a prosperous and ever-increasing progeny.

The facilities of transit which were furnished by canal conveyance, soon became inadequate to the trade which its establishment had helped so largely to develope.

A declaration of 150 merchants of Liverpool, issued in 1824, set forth that they had "for a long time past experienced great difficulty in obtaining vessels to convey goods from this place (Liverpool) to Manchester, and that the delay was prejudicial to the trading and manufacturing interests at large:" that the existing means of transport (i.e., the Irwell and Mersey navigation, and the Bridgewater canal) were "qute inadequate," and "that a new line of conveyance had become absolutely necessary to conduct the increasing trade of the country with speed, certainty, and economy." In 1830, Liverpool and Manchester were linked together by the present line of railway, and in process of time most of the larger towns in the manufacturing districts were placed in direct commmunication with Manchester, as the various projects to which the success of the original experiment gave rise, were carried into effect.

Yet, it must not be supposed that the water route is entirely superseded. There are peculiar advantages to the manufacturer in the proximity of the canal. His chief and indispensable requisites are cotton and coals. Both are very bulky; both very inexpensive in proportion to their bulk; and neither, therefore, will bear a heavy rate of freight. Besides the

other advantages of a waterside position, there is this: that both these articles may thus be easily delivered, and cheaply conveyed; the canal boats can be brought alongside, and even run into the factory yard; and their contents can be laid down upon the very spot where they are required for use. Where these conveniences are wanting, there must be the additional item of cartage introduced into the cost; and this, where constant consumption necessitates constant supply, must amount in the aggregate to a sum sufficiently considerable to make exemption from it worth trying for. The consequence is, that nearly all but some of the oldest mills,—as Houldsworth's, and that of the Oxford Road Twist Company, in Manchester—stand upon the banks of the numerous canals which intersect the district.

The original position of the various branches of the cotton manufacture in the places where it is now carried on, and which have grown into large towns from insignificant villages,—multiplying wealth "beyond the dreams of avarice,"—was undoubtedly determined by their possession of the means of water power; though this advantage soon became of little value, on the application of steam as the principal motive power. The situation of Stockport is where the Tame and the Goyt uniting form the Mersey. Upon the first of these streams stand Ashton, Dukinfield, Hyde, and Stalybridge. Manchester stands at the confluence of three rivers,—the Irwell, the Medlock, and the Irk. The two last-named are nowhere navigable, in any part of their course; and the first, though rendered navigable up to Manchester, ceases to be so at that point. Nearer to its source, it flows past Bolton and Bury: and the Medlock, higher up, passes Oldham; while Rochdale and Heywood stand upon the bank of another small stream, from which the former town takes its name—the Roach. These facts, it is manifest, bear strongly upon the point of original situation; and, as regards development, it is noticeable, that all these towns possessed canal communication more or less complete, and that the relative importance to which they had severally attained, is strikingly attested by the position which each assumed in the railway system. The presence or absence of a railway is in itself a fact of great significance, in the consideration of a question like this. The projectors or managers of a railway can only regard a group of towns under one aspect.

Their wisdom is to calculate
What [traffic] they will yield.

Thus the large towns are chosen as stations or termini, and they become larger; the smaller towns are passed or avoided, and they become smaller. The first shoot faster onward: the latter lag more in the rear. After Manchester became connected with Liverpool, lines of railway were continued or opened to Wigan, Preston, and Bolton; then to Rochdale, Heywood, and Todmorden, and so on to Leeds: and now the great centre of the district is accessible by railway, from nearly every one of its manufacturing dependencies. To some of them, indeed, this advantage has accrued somewhat tardily, and also indirectly. Those places received it latest which could wait the longest; as they were only included in the plans of rival companies, when the more remunerative towns were already supplied, and the zeal for railway extension set in rather too strongly for the interests of shareholders, however beneficial it may have been in other respects.

And now, on looking back, and comparing the present with the past, we see how, in less than a century of time, there has been wrought a very miracle of progress. The contrast is one which must astound even those who are most familiar with the facts. The population of Manchester and Salford, which in 1757, was 19,839, had increased in 1851 to 401,321. Liverpool, which in 1750 had 22,099 inhabitants, at the last census contained 375,955 souls, within the borough alone, exclusive of the environs. Between the years 1773 and 1851, the population of Bury increased from 2,090 to 31,262; and that of Bolton from 4,568 to 61,171. The importation of raw cotton, which in 1751 was under 3,000,000 lbs., had risen in 1800 to 56,000,000 lbs., and for the first three months of the present year, it was at the rate of 206,500,000. The export of cotton manufactured goods, of which in 1751, the declared value amounted to no more than £45,986, reached in the month of March last the sum of £2,476,378, or nearly £30,000,000 sterling per annum. The cotton manufactories of all kinds, in England (exclusive of Scotland and Ireland), were, in 1850, 1,753 in number: of which 1,235, or 70 per cent. were in the county of Lancaster alone, and 145, or 8¼ per cent. in Cheshire. The proportion of water to steam power employed in the cotton manufacture throughout the country was 13

per cent: but in Lancashire it was little more than 7 (actually 7.2) per cent. Instead of the hand processes, or the imperfect contrivances which retarded rather than promoted the growth of this enterprise a century ago, there was found in the factories of Lancashire a mechanical force equal to 50,286 horse-power, (in the proportion of 3,376 of water, to 46,910 of steam), and this was employed in turning 13,955,497 spindles, and propelling 176,947 power-looms.* At the same time the success which has been attained in the construction of the machinery and mechanical appliances of the cotton manufacture, has given not a local celebrity merely, but a world-wide reputation to the names of Fairbairn, Sharp, and Whitworth of Manchester, Platt of Oldham, and Nasmyth of Patricroft. And, lastly, it is worthy of notice, as a very significant proof of its wonderful prosperity, that a tract of country almost entirely destitute naturally of the water-way which is the wealth of other countries, has been supplied by skill and enterprise, with lines of canal communication and a vast net-work of railways, which bring every needful article to its own doors, and carry its products forth to every home in the country, and for distribution to every nation in the world. So that, independently of all differences of opinion, or possible diversity of interest, there can be no question whatever upon this point—that in growth of population, in rapidity of extension, in developement of resources, in the wealth which these conditions represent, in the ever-active spirit of enterprise which influences and urges and directs the whole, and in the social and national importance which fitly waits upon such extraordinary success, no district in Her Majesty's dominions can be placed in comparison with that southern division of the county of Lancaster, in which we live: and which depends as much, for its marvellous prosperity upon Liverpool and Manchester equally, as the colossal steamer, which brings New York as near to us as London used to be, depends upon the simultaneous action of *both* its paddles for its propulsion and progress.

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* See Table on the next page; extracted from the collection of Parliamentary papers in the Liverpool Free Public Library. For other assistance in the compilation of this paper, I am indebted to a work on the History of Manchester, published in 1836, by James Wheeler, Esq., of the Northern Circuit.

ABSTRACT OF A RETURN OF THE NUMBER OF COTTON AND OTHER FACTORIES, SUBJECT TO THE FACTORIES' ACT, ORDERED BY THE HOUSE OF COMMONS TO BE PRINTED, 15TH AUGUST, 1850.

COTTON FACTORIES.

FACTORIES EMPLOYED IN SPINNING.

	No. of Factories.	No. of Spindles.	No. of Power-looms.	Amount of Moving Power.		Total Numbers Employed.		
				Steam.	Water.	Male.	Female.	Male & Female.
Cheshire	76	816,680	..	1,853	229	4,025	2,911	6,936
Lancashire	517	6,110,074	..	16,102	1,340	26,165	29,847	56,012
Total for England (i.e., in counties of Chester Cumberland, Derby, Lancaster, Middlesex, Nottingham, Stafford, and York)	762	8,685,392	..	21,094	3,925	38,284	42,260	80,544

FACTORIES EMPLOYED IN WEAVING.

Cheshire	6	..	842	83	20	222	200	422
Lancashire	196	..	31,875	2,538	152	8,045	11,629	19,674
Total—(i.e. in Chester, Cumberland, Derby, Lancaster, and York)	229	..	36,544	2,840	370	9,173	13,216	22,389

FACTORIES EMPLOYED IN SPINNING AND WEAVING.

Cheshire	58	1,472,439	28,224	6,792	843	12,550	15,707	28,257
Lancashire	436	7,766,991	143,690	27,612	1,820	61,125	74,135	135,260
Total—(i.e. in Chester, Cumberland, Derby, Gloucester, Lancaster, Stafford, and York.)	540	10,055,410	184,816	37,368	3,170	79,967	96,809	177,976

FACTORIES NOT INCLUDED IN EITHER OF THE ABOVE DESCRIPTIONS.

Cheshire	5	5,584	132	16	23*	80	77	157
Lancashire	86	78,432	1,382	658	64	1,691	3,346	5,037
Total–(i.e. for Cumberland, Chester, Derby, Lancaster, Leicester, Middlesex, Norfolk, Nottingham, Stafford, Surrey, Warwick, and York.)	222	433,167	2,266	1,638	717	4,186	7,767	11,953
Total of Cotton Factories it England.	1,753	19,173,969	223,626	62,940	8,182	131,610	160,052	292,862
Total in Lancashire.	1.235	13,955,497	176,947	46,910	3,376	97,026	118,957	215,983

Mem. by Mr. Horner: The return of cotton and silk factories in my district is incomplete; for Messrs. John Bright, & Brothers, who have two factories in Rochdale, and one at Collyhurst, near Manchester, and Messrs. T. J. & T. Walker, of Leigh, near Manchester, have refused to make the return called for.

* The disparity between the proportion of steam and water-power in the manufacturing and non-manufacturing counties, may be shown by comparing Chester, Derby, and Stafford, with York and Lancaster:

	Steam-power.	Water-power.
Lancaster	658	64
York	258	46
Derby	136	323
Stafford	91	133
Chester	16	23

This refers only to the factories included under the fourth denomination.

RESULTS DEDUCED FROM OBSERVATIONS, TAKEN WITH THE SELF-REGISTERING ANEMOMETER AND RAIN-GAUGE, AT THE LIVERPOOL OBSERVATORY, DURING THE FOUR YEARS ENDING DECEMBER 31, 1855.

By John Hartnup, Esq., F.R.A.S., V.P.

(Read 17th April, 1856.)

The instrument above-named was erected by Mr. Follett Osler, in the autumn of 1851. At the Liverpool Meeting of the British Association, in 1854, Mr. Osler gave a brief history of the invention of the instrument, and I supplied him with various tables of results, and such information as was necessary to illustrate its performance. This communication, including the tables and diagrams which had been prepared, was ordered to be printed entire in the proceedings of the Association, and it will appear in the volume for 1855, together with the results of observations for that year. The printing of the tables, and the engraving of the plates, will involve a considerable expense, and as they were thought to possess considerable local interest, Professor Phillips, the Secretary of the Association, kindly gave permission for as many copies to be struck off as might be required for the next volume of the Historic Society.

In the instrument to which we have alluded, the arrangements are such, that the pressure of the wind in pounds on the square foot, the horizontal motion of the air in miles for any required interval, and the direction of the wind, are continuously recorded on sheets of paper. The time at which it commences to rain, the rate at which it falls, and when it ceases to fall, will also be found recorded on the same sheets of paper. At an elevation of about thirty feet above the roof of the observatory, a pressure plate of four superficial feet is kept facing the wind by means of a set of small vanes. This plate is urged in opposition to the wind by eight springs, so arranged that a slight spring comes into play with a light wind, and stronger springs are made to act in conjunction with the first successively

as the plate is driven back by the force of the wind. A chain from the pressure plate passes over a pulley and communicates with a wire which passes through a vertical spindle, and is held tight at the bottom by a slight spring; by this wire a pencil is moved transversely to the direction in which the paper, intended to receive the record, is carried by a clock. Lines are printed on the paper which correspond to the different values of the pressure; the intervals of these lines were adjusted by applying weights of 4lbs., 8lbs., &c., to move the pressure plate in the same manner as if moved by the force of the wind. The vanes which keep the pressure plate facing the wind are made to turn the vertical spindle, and by means of a spiral groove near the bottom of the spindle a rod is raised or depressed. This rod carries a pencil which is moved, when the direction of the wind changes, transversely to the direction in which the paper is carried by the clock. Lines are printed on the paper which correspond to the positions which the direction pencil must take when the pressure plate faces the different points of the compass; the paper has also transverse lines which correspond to the positions of the pencils at every hour. The direction pencil was adjusted by placing it on the south line when a vane placed over the transit instrument was seen, during a brisk wind, to point to the meridian mark. The meridian mark of the transit instrument is three miles distant from the observatory.

The receiving surface of the rain-gauge is 30 feet above the ground, and it exposes to the rain a surface of 400 square inches. The collected water passes through a tube into a glass vessel; the glass vessel is made to descend by the weight of the water, and in its descent a pencil is carried with it. When a quarter of an inch of rain is collected, the glass receiver discharges itself by means of a modification of the syphon, and the pencil ascends to the zero line. The scale of the printed paper was adjusted by filling the water vessel until it emptied itself, and then by weighing the water its bulk was ascertained.

The velocity of the air is obtained by means of a horizontal windmill, having for its vanes four hemispherical cups; the action of the wind on the concave surfaces exceeds that on the convex; and Dr. Robinson has found (Transactions of the Royal Irish Academy, vol. xii., part 3,) in a windmill thus constructed, the centres of the cups move with one-third the velocity of the air. The hemispheres are eight inches diameter, and the

distance of their centres from the axis of rotation is three feet. A vertical spindle connected with the horizontal windmill works in a cup which is kept nearly filled with Young's patent mineral oil; this spindle is made to turn a cylinder, the circumference of which is 27.8 inches. The paper which receives the record is stretched tight over the cylinder, and for every inch of paper worked off, the centres of the hemispheres travel 12.75 miles, or 38.25 miles of air passes over the station. The results have been tabulated on this assumption.

The paper on which the tracings are made by the pencils of the self-registering instrument are preserved for future reference, but the results are regularly tabulated.

Tables I and II are copies of the records for one month, shewing how they are tabulated daily from the registers given by the instrument.

Table I part 1, gives the horizontal motion and direction of the wind for every hour of the day; the latter is indicated by a figure, the sixteen points of the compass being numbered in rotation, commencing with N,N.E. No. 1, N.E. No. 2, &c.

Part 3, table II, is an abstract of the above, and shews the daily amount of horizontal motion from each point of the compass, and the number of hours each wind continued.

Part 4, table II, is obtained from the rain-register, and shews the quantity of rain in thousandths of an inch that fell in each hour during the month.

Part 2, table I, contains the daily totals obtained from the hourly records of the wind and rain as above described, together with the extreme pressure of the wind in pounds on the square foot for each day, and the time at which it occurred.

From the monthly sheets, of which tables I and II are specimens, the annual tables III and IV are obtained. In table III the results are arranged according to the points of the compass, and in table IV according to the hours of the day. It is unnecessary to enter on a detailed description of these, as it is hoped that the heading of each table and column affords sufficient explanation.

The tracings contained in plate **M** have been reduced from the large scale on which they were first drawn for exhibition, at the meeting of the British

Association, in Liverpool. They were laid down directly from the worked paper of the integrating instrument, according to the method suggested by Dr. Whewell. They shew the path of the wind, or the direction in which a particle of air passing directly over the observatory would be carried during each of the four years. These tracings for the different years, it will be seen, bear but little resemblance to each other, with the exception of the general tendency of the air to move from West towards East; and the motion of the air in this direction during the year 1854, was much greater than it was during either of the other years.

The diagrams in plates **N**, **O**, **P**, and **Q**, have been prepared by Mr. Osler, from the results given in tables III to VIII inclusive, with the view of conveying a more comprehensive perception of the results than can readily be obtained by consulting tables in which there are so many figures. The method also greatly facilitates the comparison of different years with each other. In the first row of diagrams in plate **N**, the various winds are classified, so as to shew the relative amount for different years, and a remarkable coincidence is observable.

In the second row of diagrams, the hours during which each wind has lasted are compared, and in these the resemblance that the different years bear to each other is even more striking.

The average hourly rate at which each wind travels, is shown in the third row of diagrams, plate **N**; from this it will be seen that all those winds having a westerly bearing travel very much the fastest. Those from the S. to the E. proceed at a much slower rate, while such as come from the North-east average but a little more than one-third the rate of the Westerly winds (for the exact rates see table III, column 6.)

With reference to the results obtained from the Rain-registers, the first row of diagrams, plate **O**, gives a comparative view of the amount of rain which accompanied each wind, while the second row exhibits the number of hours it occupied in falling; from these the hourly rate is at once obtained, and the result is shewn in the third row of diagrams on the same plate. In addition to this, the quantity of rain compared with the amount of air that passed over the station has been taken out (see table III, column 13), and a diagram (see plate **P**, fig. 2) is given, showing the mean quantity of rain that falls to every thousand miles of air from each point of the compass. By this it will be observed that for every 1000 miles of air the North-

easterly winds, which are the lightest, bring with them a much larger proportion of rain than those from any other point.

Table V gives the hourly amount of rain, and is illustrated in fig. 1, plate **P**. As far as four years are capable of indicating, it would appear that the minimum amount of rain falls during the first three hours after midnight, and that there are three periods in the day when an increased amount of rain falls, namely, between seven and eight o'clock in the morning, between one and two in the middle of the day, and between eight and nine in the evening; but before any satisfactory conclusions can be arrived at on this subject, it will be necessary to obtain averages for a longer period.

Table VI gives the average hourly motion of the air in miles for each month, direction not being regarded. The tracings shewn in fig. 3, plate **P**, exhibit the comparative results given in this table, by which it appears that the greatest amount of motion in the air takes place in the months of December, January and February. November seems to be the stillest month in the year, and March, which is usually considered such a windy month, is in fact one of the four in which the least amount of motion in the air occurs, while April is only surpassed by the three winter months mentioned above.

Table VIII, like the preceding, gives the mean hourly motion of the air without regard to direction, but instead of referring to the months, shews the amount of motion between any one hour of the day and the next hour following, for each of the four seasons. This is illustrated in plate **Q**, in which a remarkable coincidence will be seen to exist between the curves and the temperature at the different hours of the day.

The value of the observations will necessarily increase with their progressive accumulation. There are, doubtless, many interesting results which still remain to be worked out from the records which we already possess, and I trust that the method which we have devised of tabulating the observations (see specimen tables I and II*) will be found to render it a comparatively easy task to work out such results as may at any future time be thought desirable.

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* The illustrative Tables and Plates are inserted between this and the next numbered page.

…ne day.

	N.W. 14			
	20		21	
	Miles.	Direction.	Miles.	
5	4	16	4	
4	9	14	7	
3	16	13	16	
4	6	14	6	
5	4	16	6	
	6	5	7	
	6	14	6	
	11	7	9	
	9	6	12	
	8	4	5	
	9	13	6	1
	4	13	2	1
	12	8	9	
	15	11	13	
	2	15	1	1
	17	13	17	1
	20	13	22	1
	4	13	2	1
	22	13	25	1
	20	13	16	1
	1	15	1	1
	4	15	5	1
	8	15	9	1
	4	1	5	
	14	12	10	1
	9	8	8	
	5	10	6	1
	8	15	7	1
	9	14	7	1
	3	11	7	
	12	13	9	1
	281		265	
	9·7		8·6	

Part 3.

1855. July.	N.N.E. 1		N.E. 2		E.N.E. 3		13
	Miles.	Hours.	Miles.	Hours.	Miles.	Hours.	
1	....	..	....	..	9	2	....
2	....	..	....	..	....	..	....
3	....	..	....	..	....	..	....
4	....	..	....	..	....	..	....
5	....	..	6	1	8	1	....
6	....	..	....	..	....	..	....
7	....	..	....	..	....	..	....
8	....	..	....	..	....	..	....
9	....	..	....	..	....	..	....
10	4	1	....	..	48	4	....
11	2	1	....	..	3	1	....
12	4	1	....	..	....	..	....
13	....	..	....	..	....	..	·01
14	....	..	....	..	....	..	....
15	....	..	....	..	....	..	·03
16	....	..	....	..	....	..	....
17	....	..	....	..	....	..	....
18	....	..	....	..	....	..	....
19	....	..	....	..	....	..	....
20	....	..	....	..	....	..	....
21	....	..	....	..	....	..	....
22	....	..	....	..	....	..	....
23	34	7	4	2	....	5	....
24	35	6	....	..	....	0	·07
25	....	..	....	..	....	..	....
26	....	..	....	..	....	..	....
27	....	..	....	..	....	..	....
28	....	..	....	..	....	..	....
29	....	..	....	..	....	..	....
30	....	..	....	..	....	1	·09
31	....	..	....	..	....	2	·20
Sum ..	79	16	10	3	68		

easterly winds, which are the lightest, bring with them a much larger proportion of rain than those from any other point.

Table V gives the hourly amount of rain, and is illustrated in fig. 1, plate **P**. As far as four years are capable of indicating, it would appear that the minimum amount of rain falls during the first three hours after midnight, and that there are three periods in the day when an increased amount of rain falls, namely, between seven and eight o'clock in the morning, between one and two in the middle of the day, and between eight and nine in the evening; but before any satisfactory conclusions can be arrived at on this subject, it will be necessary to obtain averages for a longer period.

Table VI gives the average hourly motion of the air in miles for each month, direction not being regarded. The tracings shewn in fig. 3, plate **P**, exhibit the comparative results given in this table, by which it appears that the greatest amount of motion in the air takes place in the months of December, January and February. November seems to be the stillest month in the year, and March, which is usually considered such a windy month, is in fact one of the four in which the least amount of motion in the air occurs, while April is only surpassed by the three winter months mentioned above.

Table VIII, like the preceding, gives the mean hourly motion of the air without regard to direction, but instead of referring to the months, shews the amount of motion between any one hour of the day and the next hour following, for each of the four seasons. This is illustrated in plate **Q**, in which a remarkable coincidence will be seen to exist between the curves and the temperature at the different hours of the day.

The value of the observations will necessarily increase with their progressive accumulation. There are, doubtless, many interesting results which still remain to be worked out from the records which we already possess, and I trust that the method which we have devised of tabulating the observations (see specimen tables I and II*) will be found to render it a comparatively easy task to work out such results as may at any future time be thought desirable.

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* The illustrative Tables and Plates are inserted between this and the next numbered page.

Horizontal motion of the air in miles referred to 16 points

Rain in thousandths of an inch which fell during each hour

1854 July	N.N.E. 1 Miles per hour	2	3	4	E. 5 Miles per hour	6	E.S.E. 7 Miles per hour	8	S.E. 9 Miles per hour	S.S.E. 10 Miles per hour	S. 11 Miles per hour	S.S.W. 12 Miles per hour	S.W. 13 Miles per hour	W.S.W. 14 Miles per hour	W. 15 Miles per hour	W.N.W. 16 Miles per hour	N.W. 17 Miles per hour	N.N.W. 18 Miles per hour	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	July
1																																											1
2																																												2
3																																												3
4																																												4
5																																												5
6																																												6
7																																												7
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24																																												24
25																																												25
26																																												26
27																																												27
28																																												28
29																																												29
30																																												30
31																																												31

which fell during each hour.

14	15	16	17	18	19	20	21	22	23	24	July.
....	....	....	....	....	....	....	....	....	....	....	1
....	....	....	....	....	....	....	....	....	....	....	2
....	....	....	....	....	....	....	....	....	....	....	3
....	....	....	....	....	....	....	....	....	....	....	4
....	....	....	....	....	....	....	....	....	....	....	5
....	....	....	....	....	....	....	....	....	....	....	6
....	....	....	....	....	....	....	....	....	....	....	7
....	....	....	....	....	....	....	....	....	....	....	8
....	....	....	....	....	....	....	....	....	....	....	9
....	....	·045	....	....	...	....	....	....	....	....	10
....	....	....	....	....	....	....	....	....	....	....	11
....	....	....	....	....	....	....	·010	....	....	....	12
....	....	....	....	....	....	....	....	·058	·032	·015	13
....	....	·030	....	·205	....	....	....	....	...	....	14
....	....	....	....	....	....	....	....	....	....	....	15
....	....	....	....	....	....	....	....	....	....	....	16
....	....	....	....	....	....	....	....	....	....	....	17
....	....	....	....	....	....	....	....	....	....	....	18
....	....	....	....	·004	....	·004	....	....	....	....	19
....	....	....	....	....	....	....	....	....	....	....	20
....	....	....	....	....	....	....	....	....	....	....	21
....	....	....	....	....	....	....	....	....	....	....	22
....	....	....	....	....	....	....	....	·020	·033	·160	23
....	....	....	....	....	....	·055	....	....	....	·250	24
·060	·085	·135	·120	·020	·132	·032	·111	·135	·020	·008	25
....	....	....	....	....	....	....	....	....	....	....	26
....	·123	....	....	....	....	....	....	....	....	....	27
....	....	....	....	....	....	....	....	....	....	....	28
....	....	....	....	...	....	....	....	....	....	....	29
....	....	....	....	....	....	....	....	....	·018	·014	30
·184	·042	....	....	....	....	....	....	....	....	....	31
·244	·250	·210	·120	·229	·132	·091	·121	·213	·103	·447	

CHART of the WIND

LIVERPOOL OBSERVATORY

1852 1853 1854 1855

TABLE III.—Abstract of Results derived from the Integrating Anemometer and Rain-gauge arranged according to the direction of the wind. 1852. See Plates N and O.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	2,488	0·35	*426	0·78	5·8	0·48	†2·353	1·20	34·3	0·80	0·069	0·945
N.E.	1,239	0·17	198	0·36	6·3	0·50	1·158	0·59	20·0	0·47	0·058	0·934
E.N.E.	2,799	0·39	320	0·58	8·7	0·69	1·439	0·73	24·2	0·57	0·060	0·514
E.	4,708	0·66	427	0·78	11·0	0·89	1·408	0·72	30·9	0·72	0·046	0·299
E.S.E.	4,134	0·58	423	0·77	9·8	0·79	1·487	0·76	27·5	0·64	0·054	0·360
S.E.	5,907	0·83	515	0·96	11·5	0·91	1·609	0·82	34·3	0·80	0·047	0·272
S.S.E.	18,111	2·54	1506	2·75	12·0	0·95	4·414	2·25	117·8	2·76	0·037	0·243
S.	10,452	1·48	909	1·66	11·5	0·91	1·742	0·89	66·5	1·55	0·026	0·167
S.S.W.	8,059	1·09	587	1·07	13·7	1·09	1·815	0·92	41·2	0·97	0·044	0·225
S.W.	8,311	1·22	445	0·81	18·7	1·48	2·003	1·02	41·9	0·98	0·048	0·241
W.S.W.	6,982	0·98	417	0·76	16·7	1·32	2·099	1·07	41·2	0·97	0·051	0·300
W.	7,479	1·05	397	0·69	18·8	1·49	1·670	0·85	43·9	1·03	0·038	0·223
W.N.W.	14,541	2·03	763	1·39	19·1	1·51	3·264	1·66	71·3	1·68	0·046	0·224
N.W.	7,788	1·09	476	0·87	16·4	1·30	1·147	0·53	32·2	0·76	0·033	0 147
N.N.W.	8,702	1·24	629	1·15	13·8	1·10	2·984	1·52	33·6	0·79	0·089	0·342
N.	2,576	0·36	327	0·59	7·9	0·62	0·947	0·48	22·7	0·53	0 042	0·367
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	114,276						31·539		683·5 = 28 days, 11 hours, 30 minutes.			

* There were nineteen calm hours in the year.

† There was one calm hour during which 0·054 of an inch of rain fell.

Mean quantity of rain to every 1000 miles of air, 0·276 in.
Mean quantity per hour during the time that rain fell, 0·461.

TABLE III. (*continued*). 1853.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00).	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	4,303	0·65	655	1·26	6·6	0·55	1·700	1·21	40·1	1·20	0·042	0·392
N.E.	1,502	0·23	240	0·46	6·3	0·53	0·843	0·60	19·4	0·58	0·043	0·561
E.N.E.	2,773	0·42	360	0·69	7·7	0·65	0·836	0·59	19·4	0·58	0·043	0·301
E.	4,262	0·64	388	0·75	11·0	0·91	1·466	1·04	27·4	0·82	0·058	0·343
E.S.E.	3,832	0 58	404	0·76	9·5	0·80	0·954	0·68	19·4	0·58	0·049	0·248
S.E.	5,929	0·89	488	0·94	12·1	1·02	1·119	0·79	24·1	0·76	0·046	0·187
S.S.E.	14,316	2·15	1233	2·23	11·6	0·97	3·124	2·22	93·0	2·27	0·034	0·218
S.	6,358	0·95	646	1·25	9·8	0·82	1·479	1·05	47·5	1·46	0·031	0·217
S.S.W.	5,160	0·78	459	0·89	11·2	0·94	1·125	0·80	36·8	1·10	0·031	0·218
S.W.	7,572	1·14	432	0·83	17·5	1·47	1·262	0·81	34·8	1·05	0·036	0·166
W.S.W.	5,952	0·90	393	0·76	15·1	1·27	1·554	1·11	48·2	1·44	0·032	0·261
W.	6,938	1·04	395	0·76	17·6	1·48	2·085	1·48	42·8	1·28	0·049	0·300
W.N.W.	14,292	2·15	814	1·57	17·6	1·48	2·146	1·53	78·2	2·23	0·027	0·150
N.W.	9,678	1·45	662	1·28	14·9	1·25	1·091	0·78	47·5	1·42	0·023	0·102
N.N.W.	9,045	1·36	696	1·34	13·0	1·08	0·914	0·65	28·8	0·86	0·032	0·100
N.	4,077	0·63	468	0·90	8·7	0·72	0·777	0·55	20·8	0·62	0·037	0·190
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	105,989						22·475		625·2 = 26 days 1 hour 12 minutes.			

There were twenty-seven calm hours.
Mean quantity of rain to every 1000 miles of air, 0·212 in.
Mean quantity per hour during the time that rain fell, 0·357.

Table III. (*continued*). 1854.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	2,604	0·33	373	0·68	6·5	0·50	1·061	0·78	18·2	0·54	0·058	0·407
N.E.	1,020	0·13	148	0·27	6·9	0·54	0·071	0·05	9·1	0·27	0·008	0·060
E.N.E.	1,481	0·19	199	0·36	7·1	0·55	0·361	0·26	13·8	0·41	0·026	0·243
E.	2,781	0·35	256	0·47	10·5	0·81	0·442	0·32	6·3	0·19	0·070	0·158
E.S.E.	3,046	0·38	309	0·56	9·9	0·76	0·760	0·51	13·1	0·39	0·053	0·229
S.E.	4,076	0·51	374	0·68	10·9	0·85	1·471	1·07	27·5	0·82	0·053	0·369
S.S.E.	12,317	1·53	1106	2·02	11·1	0·86	2·782	2·01	72·2	2·15	0·039	0·225
S.	7,196	0·90	673	1·23	10·7	0·83	1·436	1·04	41·8	1·24	0·034	0·190
S.S.W.	5,654	0·71	496	0·91	11·4	0·88	0·960	0·69	29·7	0·88	0·032	0·169
S.W.	6,486	0·81	411	0·75	15·8	1·21	0·989	0·72	22·3	0·66	0·044	0·152
W.S.W.	8,993	1·11	561	1·02	16·5	1·26	2·558	1·85	61·0	1·81	0·042	0·284
W.	14,331	1·77	666	1·22	21·5	1·66	2·689	1·94	64·7	1·92	0·042	0·187
W.N.W.	24,622	3·07	1210	2·21	20·3	1·58	2·689	1·94	68·9	2·05	0·039	0·109
N.W.	18,393	2·29	741	1·36	24·8	1·92	1·410	1·02	42·9	1·28	0·033	0·076
N.N.W.	11,666	1·45	820	1·50	14·2	1·10	1·922	1·39	30·0	0·89	0·064	0·164
N.	3,617	0·45	413	0·76	8·8	0·68	0·574	0·42	16·0	0·48	0·035	0·158
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	128,283						22·115		537·5 = 22 days, 9 hours, 30 minutes.			

There were four calm hours in the year.
Mean quantity of rain to every 1000 miles of air, 0·172 in.
Mean quantity per hour during the time that rain fell, 0·411.

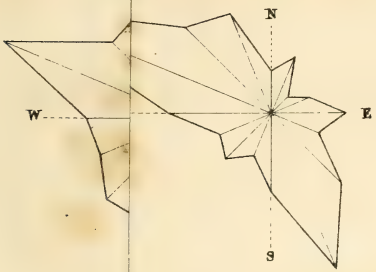
Table III. (*continued*). 1855.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	4,456	0·67	703	1·28	6·4	0·56	0·973	0·69	34·9	1·03	0·028	0·218
N.E.	1,727	0·26	264	0·48	7·3	0·64	0·233	0·17	9·2	0·27	0·025	0·134
E.N.E.	3,014	0·46	383	0·70	7·9	0·69	0·702	0·49	14·5	0·43	0·048	0·232
E.	5,418	0·84	460	0·84	11·8	1·04	0·182	0·13	4·0	0·12	0·046	0·033
E.S.E.	3,807	0·59	401	0·73	9·4	0·83	0·599	0·42	10·8	0·32	0·056	0·157
S.E.	7,229	1·10	556	1·02	11·2	0·99	1·146	0·81	30·7	0·91	0·037	0·158
S.S.E.	12,267	1·90	1132	2·07	10·8	0·95	3·129	2·20	118·0	3·50	0·027	0·255
S.	5,728	0·88	614	1·12	9·3	0·82	1·860	1·31	45·8	1·35	0 041	0·324
S.S.W.	3,322	0·52	302	0 55	11·0	0·97	0·352	0·24	12·6	0·37	0 028	0·105
S.W.	4,742	0·73	312	0·57	15·0	1·32	1·486	1·05	18·8	0 56	0·071	0·313
W.S.W.	4,014	0·62	309	0·56	13·0	1·15	0·262	0·18	20·0	0·59	0·013	0·065
W.	7,439	1·15	413	0·76	18·0	1·59	3·912	2·77	52·2	1·55	0·075	0·525
W.N.W.	20,353	3·15	1046	1·91	19·5	1·72	2·744	1·94	64·5	1·91	0·043	0·134
N.W.	8,857	1·36	630	1·15	14·1	1·14	2·722	1·91	44·9	1·30	0·060	0·307
N.N.W.	7,883	1·22	782	1·43	10·1	0·89	0·826	0·58	25·7	0·76	0·032	0·104
N.	3,149	0·49	441	0·81	7·1	0·63	1·440	1·02	33·2	0·98	0·043	0·457
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	103,405						22·568		539·8 = 22 days 11 hours 48 minutes.			

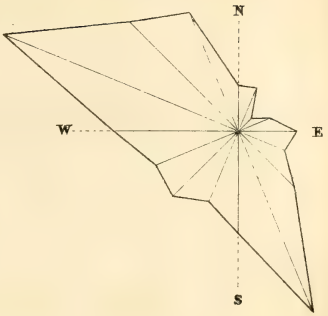
There were twelve calm hours.
Mean quantity of rain to every 1000 miles of air, 0·218 in.
Mean quantity per hour during the time that rain fell, 0·418.

III. Column 2.

1852 1855

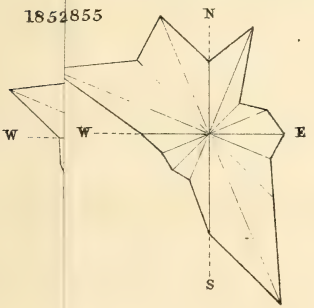


Mean

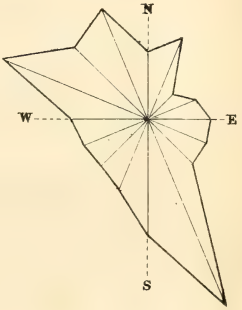


See Table III. Column 4.

1852 1855

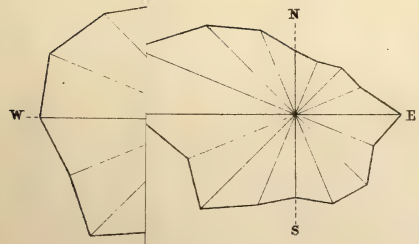


Mean



ee Table III. Column 6.

1852 855



Mean

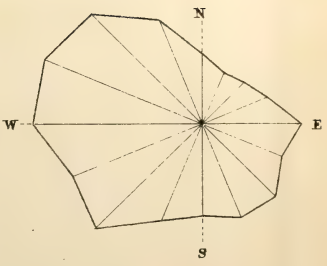


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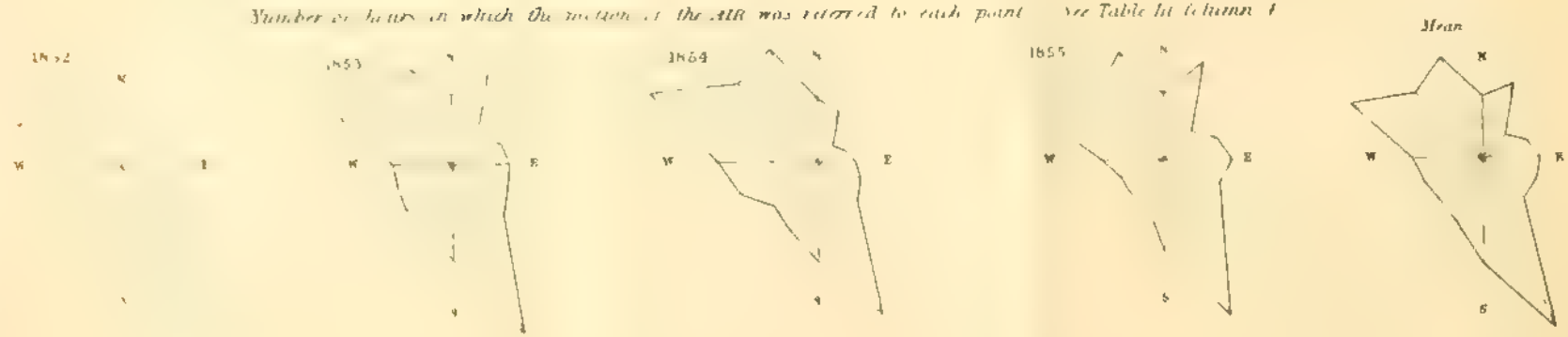
Table III. (*continued*). 1855.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	4,456	0·67	703	1·28	6·4	0·56	0·973	0·69	34·9	1·03	0·028	0·218
N.E.	1,727	0·26	264	0·48	7·3	0·64	0·233	0·17	9·2	0·27	0·025	0·134
E.N.E.	3,014	0·46	383	0·70	7·9	0·69	0·702	0·49	14·5	0·43	0·048	0·232
E.	5,418	0·84	460	0·84	11·8	1·04	0·182	0·13	4·0	0·12	0·046	0·033
E.S.E.	3,807	0·59	401	0·73	9·4	0·83	0·599	0·42	10·8	0·32	0·056	0·157
S.E.	7,229	1·10	556	1·02	11·2	0·99	1·146	0·81	30·7	0·91	0·037	0·158
S.S.E.	12,267	1·90	1132	2·07	10·8	0·95	3·129	2·20	118·0	3·50	0·027	0·255
S.	5,728	0·88	614	1·12	9·3	0·82	1·860	1·31	45·8	1·35	0 041	0·324
S.S.W.	3,322	0·52	302	0 55	11·0	0·97	0·352	0·24	12·6	0·37	0 028	0·105
S.W.	4,742	0·73	312	0·57	15·0	1·32	1·486	1·05	18·8	0 56	0·071	0·313
W.S.W.	4,014	0·62	309	0·56	13·0	1·15	0·262	0·18	20·0	0·59	0·013	0·065
W.	7,439	1·15	413	0·76	18·0	1·59	3·912	2·77	52·2	1·55	0·075	0·525
W.N.W.	20,353	3·15	1046	1·91	19·5	1·72	2·744	1·94	64·5	1·91	0·043	0·134
N.W.	8,857	1·36	630	1·15	14·1	1·14	2·722	1·91	44·9	1·30	0·060	0·307
N.N.W.	7,883	1·22	782	1·43	10·1	0·89	0·826	0·58	25·7	0·76	0·032	0·104
N.	3,149	0·49	441	0·81	7·1	0·63	1·440	1·02	33·2	0·98	0·043	0·457
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	103,405						22·568		539·8 = 22 days 11 hours 48 minutes.			

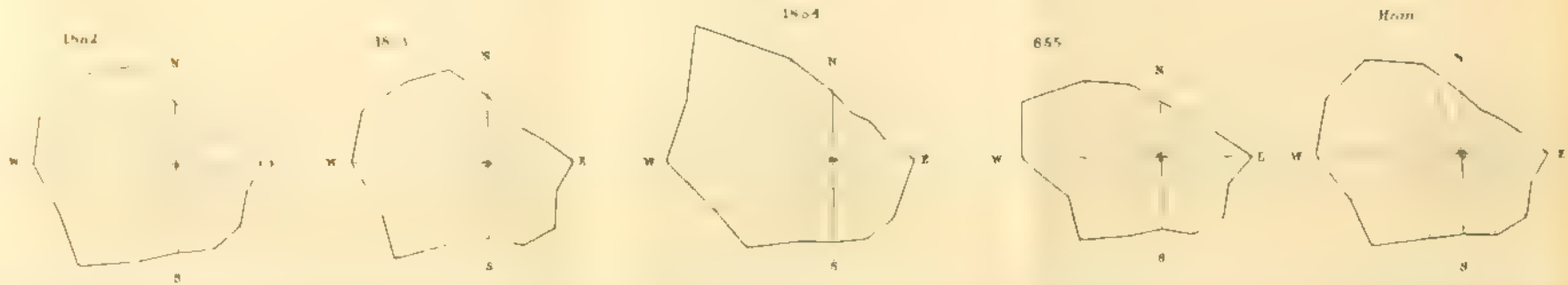
There were twelve calm hours.
Mean quantity of rain to every 1000 miles of air, 0·218 in.
Mean quantity per hour during the time that rain fell, 0·418.

Comparative amount of horizontal motion of the Air. See Table III Column

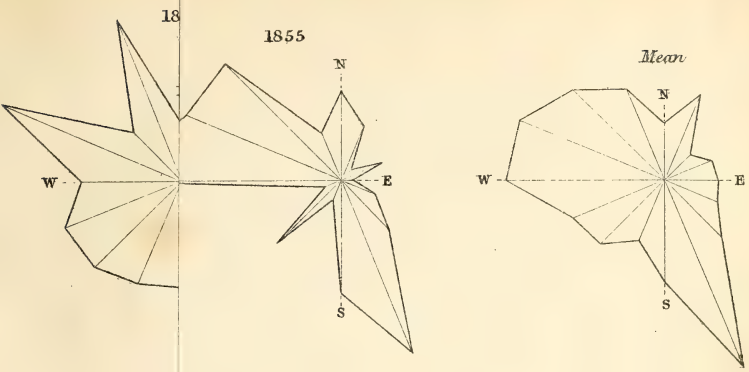
Number of hours in which the motion of the Air was referred to each point. See Table III Column 4



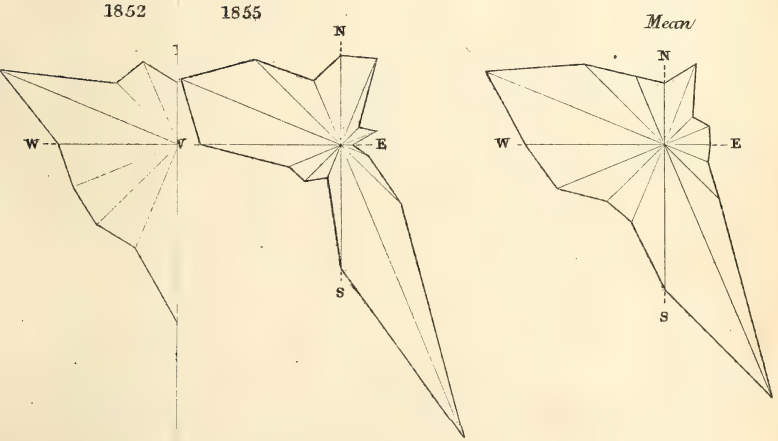
Average hourly horizontal motion of the Air from each point. See Table III Column 6



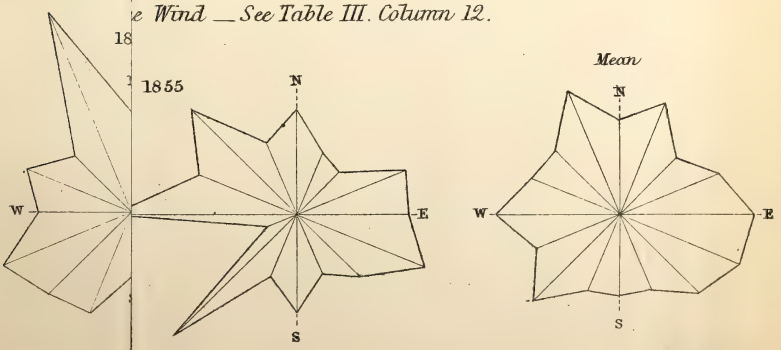
ts falling — See Table III. Column 8.



— See Table III. Column 10.



e Wind — See Table III. Column 12.



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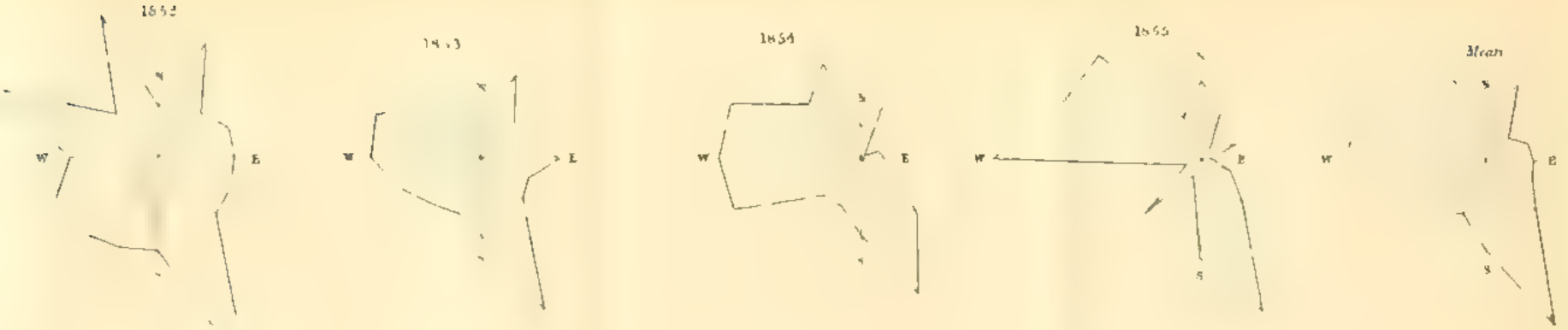
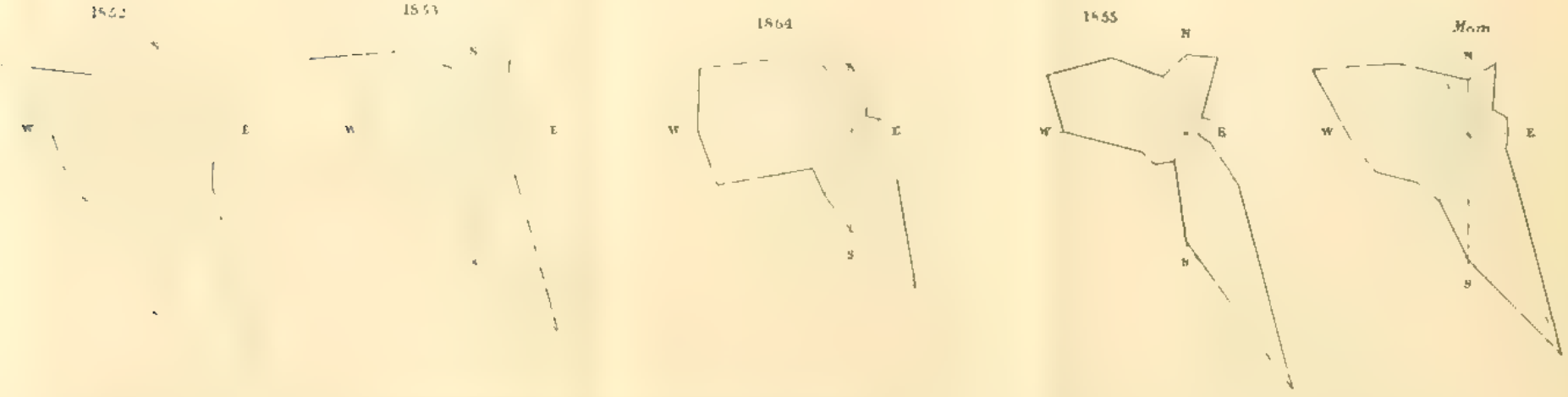
Quantity of RAIN arranged according to the direction of the Wind at the time of its fall. See Table III column 9.



Time in hours during which RAIN fell referred to the points of the compass. See Table III column 10.



Average hourly quantity of RAIN that fell arranged according to the direction of the Wind. See Table III Column 12.

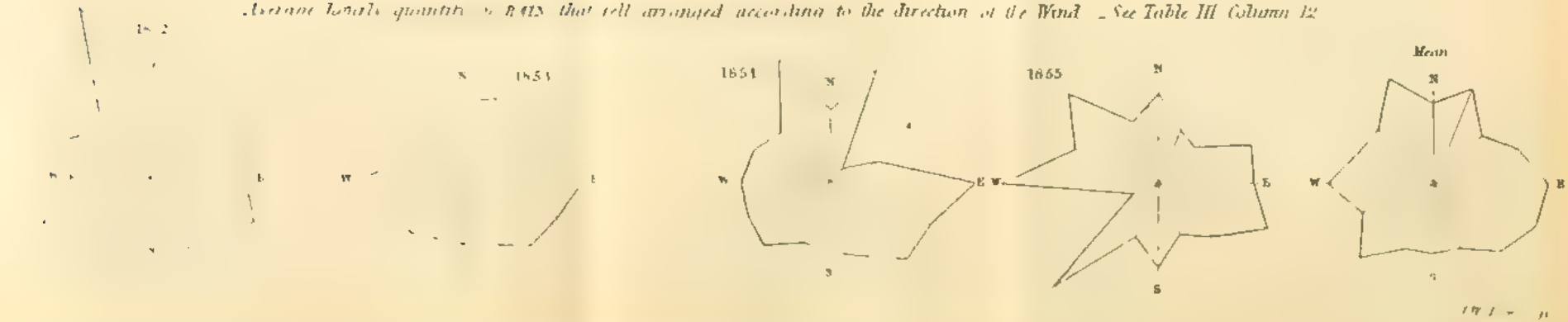


TABLE III. (*continued*). Means for the years 1852, 1853, 1854, and 1855.

Points of the Compass.	Whole amount of horizontal motion of the air.	Relative amount of horizontal motion of the air. (Mean = 1·00.)	Number of hours in which the direction of the wind was referred to each point.	Relative time the direction of the wind was referred to each point. (Mean = 1·00.)	Average hourly horizontal motion of the air from each point.	Relative hourly horizontal motion of the air. (Mean = 1·00.)	Whole fall of rain arranged according to the direction of the wind.	Relative fall of rain. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell.	Mean quantity of rain to every 1000 miles of air.
	Miles.		Hours.		Miles.		Inches.		Hours.		Inch.	Inch.
N.N.E.	3,463	0·49	539	0·98	6·20	0·49	1·522	0·99	31·9	0·86	0·049	0·440
N.E.	1,372	0·19	213	0·39	6·60	0·51	0·576	0·37	14·4	0 39	0·033	0·420
E.N.E.	2,517	0 36	315	0·58	7·80	0·60	0·834	0·55	18·0	0·49	0·044	0·331
E.	4,292	0·61	383	0·70	11·00	0·85	0·874	0·56	17·1	0·46	0·055	0·203
E.S.E.	3,705	0·52	384	0·70	9·60	0·74	0·935	0·60	17·7	0·48	0·053	0·252
S.E.	5,785	0·82	483	0·88	11·60	0 90	1·334	0·86	29·1	0·79	0·046	0·231
S.S.E.	14,253	2·02	1244	2·28	11·40	0·88	3·362	2·18	100·2	2·71	0·034	0 236
S.	7,433	1·05	711	1·30	10 30	0·80	1·629	1·05	50·4	1·36	0·033	0·219
S.S.W.	5,549	0·79	461	0·84	11·80	0·91	1·063	0·69	30·1	0 81	0·034	0·192
S.W.	6,778	0·96	400	0·73	16·70	1·30	1·435	0·93	29·4	0·80	0·050	0·212
W.S.W.	6,485	0·92	420	0·77	15·50	1·20	1·518	0·98	42·6	1·15	0·036	0·234
W.	9,047	1·28	468	0·85	18·90	1·46	2·589	1·68	50·9	1·37	0·051	0·286
W.N.W.	18,452	2·61	958	1·75	19·00	1·47	2·711	1·76	70·7	1·91	0 039	0·141
N.W.	11,179	1·58	627	1·15	17·40	1·35	1·592	1·03	41·9	1·13	0·037	0·142
N.N.W.	9,324	1·32	732	1·34	12·70	0·98	1·661	1·07	29·5	0·80	0·054	0·177
N.	3,355	0·48	412	0·75	7·80	0·60	0·934	0·60	23·2	0·63	0·039	0·278
Columns...1	2	3	4	5	6	7	8	9	10	11	12	13
	112,989						24·671		597·1 = 24 days 21 hours 6 minutes.			

TABLE IV.—Abstracts of Results from the Integrating Anemometer and the Pluviometer during the years 1852, 1853, 1854, and 1855, arranged according to the hours of the day. 1852.

Hours of the day.	Mean horizontal motion of the air in miles for each hour of the day.	Relative horizontal motion of the air for each hour. (Mean = 1·00.)	Whole amount of rain which fell between the hours named in the side column.	Relative fall of rain for each hour of the day. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell for each hour of the day.
Columns.....1	2	3	4	5	6	7	8
h h	Miles.		Inches.		Hours.		Inch.
12 to 1 A.M.	11·2	0·86	1·269	0·97	30·2	1·06	0·042
1 „ 2	11·4	0·88	1·242	0·95	26·2	0·92	0·048
2 „ 3	11·4	0·88	1·529	1·08	34·3	1·20	0·042
3 „ 4	11·5	0·88	1·353	1·03	35·0	1·23	0·038
4 „ 5	12·0	0·92	1·160	0·88	24·0	0·84	0·048
5 „ 6	12·0	0·92	1·386	1·06	30·2	1·06	0·046
6 „ 7	12·2	0·94	1·398	1·07	28·2	0·99	0·050
7 „ 8	12·7	0·98	1·555	1·19	28·8	1·01	0·054
8 „ 9	13·4	1·03	1·459	1·11	31·6	1·11	0·046
9 „ 10	13·7	1·05	1·090	0·83	28·8	1·01	0·038
10 „ 11	14·4	1·11	1·389	1·07	27·5	0·97	0·050
11 „ 12	15·1	1·16	0·936	0·71	26·8	0·94	0·035
12 „ 1 P.M.	15·2	1·17	1·305	0·99	25·4	0·89	0·051
1 „ 2	15·5	1·19	1·178	0·89	26·7	0·94	0·044
2 „ 3	15·2	1·17	1·359	1·04	26·1	0·92	0·051
3 „ 4	14·9	1·14	1·476	1·13	26·7	0·94	0·055
4 „ 5	14·5	1·11	1·241	0·95	35·6	1·25	0·035
5 „ 6	13·6	1·04	1·262	0·96	26·7	0·94	0·047
6 „ 7	13·1	1·01	1·354	1·03	30·9	1·08	0·044
7 „ 8	12·7	0·98	0·851	0·64	21·9	0·77	0·039
8 „ 9	12·2	0·94	1·594	1·21	28·9	1·01	0·055
9 „ 10	11·6	0·89	1·306	1·00	24·0	0·84	0·054
10 „ 11	11·5	0·88	1·356	1·03	29·5	1·04	0·046
11 „ 12	11·5	0·88	1·545	1·18	29·5	1·04	0·052
			1853.				
12 to 1 A.M.	10·3	0·85	0·607	0·68	16·1	0·69	0·037
1 „ 2	10·5	0·87	0·833	0·93	21·4	0·91	0·039
2 „ 3	10·7	0·88	0·607	0·68	21·4	0·91	0·026
3 „ 4	10·5	0·87	0·766	0·85	26·1	1·12	0·029
4 „ 5	10·8	0·89	1·049	1·17	30·2	1·29	0·035
5 „ 6	10·8	0·89	0·915	1·02	27·5	1·18	0·034
6 „ 7	11·3	0·93	1·089	1·21	30·8	1·32	0·035
7 „ 8	12·0	0·99	1·249	1·38	30·8	1·32	0·040
8 „ 9	12·5	1·03	1·046	1·17	32·8	1·40	0·032
9 „ 10	13·2	1·09	1·185	1·34	30·1	1·29	0·039
10 „ 11	13·8	1·14	1·577	1·76	30·1	1·29	0·052
11 „ 12	14·2	1·17	0·860	0·96	22·1	0·94	0·039
12 „ 1 P.M.	14·5	1·20	1·011	1·13	27·5	1·14	0·037
1 „ 2	14·7	1·21	1·173	1·31	28·8	1·24	0·041
2 „ 3	14·4	1·19	0·818	0·91	25·5	1·04	0·032
3 „ 4	14·0	1·16	0·811	0·90	26·1	1·12	0·031
4 „ 5	13·5	1·12	1·047	1·17	31·5	1·35	0·033
5 „ 6	12·7	1·05	0·920	1·03	30·8	1·32	0·030
6 „ 7	11·7	0·97	1·108	1·24	30·1	1·29	0·037
7 „ 8	11·2	0·93	0·788	0·88	28·1	1·20	0·028
8 „ 9	11·0	0·91	0·913	1·02	21·4	0·91	0·042
9 „ 10	10·9	0·90	0·681	0·76	20·1	0·86	0·034
10 „ 11	10·5	0·87	0·631	0·70	18·1	0·78	0·035
11 „ 12	10·6	0·88	0·820	0·91	21·4	0·91	0·038

TABLE IV. (*continued*). 1854.

Hours of the day.	Mean horizontal motion of the air in miles for each hour of the day.	Relative horizontal motion of the air for each hour. (Mean = 1·00.)	Whole amount of rain which fell between the hours named in the side column.	Relative fall of rain for each hour of the day. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell for each hour of the day.
Columns.....1	2	3	4	5	6	7	8
h h	Miles.		Inches.		Hours.		Inch.
12 to 1 A.M.	12·8	0·90	0·762	0·83	18·2	0·77	0·042
1 „ 2	12·8	0·90	0·415	0·45	20·4	0·92	0·020
2 „ 3	12·8	0·90	0·556	0·60	18·7	0·78	0·030
3 „ 4	13·1	0·92	1·031	1·12	28·6	1·26	0·036
4 „ 5	12·6	0·89	1·289	1·40	31·8	1·42	0·041
5 „ 6	12·6	0·89	1·247	1·35	26·0	1·16	0·048
6 „ 7	12·8	0·90	1·263	1·37	27·3	1·22	0·046
7 „ 8	13·6	0·96	1·112	1·21	26·2	1·18	0·043
8 „ 9	14·0	0·99	0·593	0·63	20·2	0·90	0·029
9 „ 10	14·9	1·05	0·881	0·96	20·2	0·90	0·043
10 „ 11	15·2	1·07	0·706	0·76	21·8	0·97	0·032
11 „ 12	15·5	1·09	0·936	1·01	26·3	1·17	0·036
12 „ 1 P.M.	16·3	1·15	0·820	0·89	20·1	0·90	0·039
1 „ 2	16·6	1·17	1·026	1·11	20·0	0·90	0·051
2 „ 3	16·3	1·15	0·714	0·78	17·4	0·78	0·041
3 „ 4	16·0	1·13	0·776	0·84	16·9	0·75	0·046
4 „ 5	15·6	1·10	1·090	1·18	20·9	0·93	0·052
5 „ 6	14·9	1·05	0·733	0·79	19·1	0·85	0·038
6 „ 7	14·5	1·02	0·836	0·91	26·6	1·19	0·031
7 „ 8	14·0	0·99	1·052	1·14	25·4	1·13	0·041
8 „ 9	13·5	0·96	1·518	1·64	21·8	0·97	0·069
9 „ 10	13·3	0·94	1·065	1·16	19·6	0·87	0·054
10 „ 11	13·3	0·94	0·734	0·80	22·8	1·01	0·033
11 „ 12	13·1	0·92	0·860	0·93	21·2	0·94	0·041
			1855.				
12 to 1 A.M.	10·5	0·89	0·657	0·69	22·2	0·99	0·029
1 „ 2	10·5	0·89	0·971	1·03	24·6	1·09	0·039
2 „ 3	10·3	0·87	0·771	0·82	21·4	0·95	0·036
3 „ 4	10·4	0·87	0·827	0·88	25·1	1·11	0·033
4 „ 5	10·4	0·87	0·827	0·88	26·5	1·18	0·031
5 „ 6	10·5	0·89	0·648	0·68	20·3	0·90	0·032
6 „ 7	10·8	0·91	0·795	0·84	22·9	1·01	0·035
7 „ 8	11·5	0·97	0·856	0·91	24·3	1·08	0·035
8 „ 9	11·6	0·97	0·666	0·71	25·3	1·12	0·027
9 „ 10	12·3	1·04	0·880	0·93	26·0	1·16	0·034
10 „ 11	13·1	1·11	0·768	0·81	20·2	0·90	0·038
11 „ 12	13·5	1·14	1·121	1·19	25·4	1·12	0·044
12 „ 1 P.M.	13·9	1·18	1·445	1·53	23·3	1·03	0·062
1 „ 2	14·2	1·20	1·756	1·86	19·7	0·87	0·081
2 „ 3	14·0	1·18	0·933	0·98	15·0	0·66	0·062
3 „ 4	13·5	1·14	0·778	0·83	23·0	1·02	0·034
4 „ 5	13·0	1·11	0·887	0·94	19·9	0·88	0·044
5 „ 6	12·6	1·06	1·608	1·69	20·6	0·91	0·078
6 „ 7	11·6	0·97	1·025	1·08	19·8	0·88	0·052
7 „ 8	11·2	0·95	0·916	0·96	24·7	1·09	0·037
8 „ 9	10·8	0·91	0·971	1·03	19·9	0·88	0·049
9 „ 10	10·8	0·91	0·653	0·68	22·8	1·01	0·029
10 „ 11	10·7	0·91	0·709	0·75	25·1	1·11	0·028
11 „ 12	10·6	0·89	1·100	1·17	21·8	0·97	0·050

Table IV. (*continued*).—Means for the years 1852, 1853, 1854, and 1855.

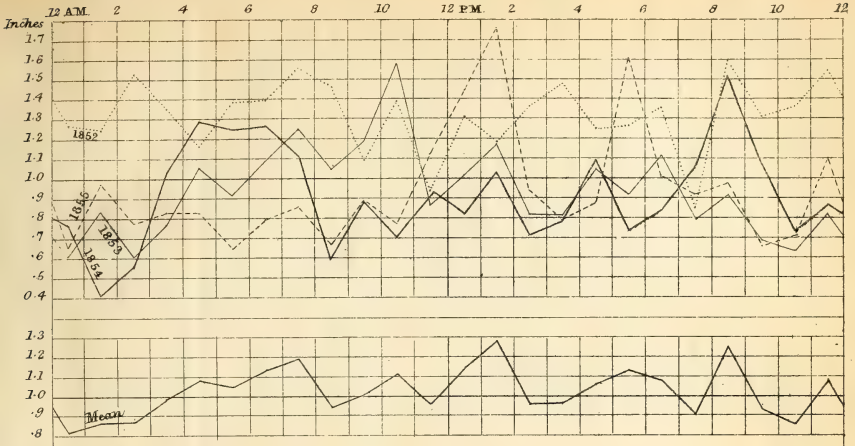
Hours of the day.	Mean horizontal motion of the air in miles for each hour of the day.	Relative horizontal motion of the air for each hour. (Mean = 1·00.)	Whole amount of rain which fell between the hours named in the side column.	Relative fall of rain for each hour of the day. (Mean = 1·00.)	Whole time in hours during which rain fell.	Relative time during which rain fell. (Mean = 1·00.)	Average hourly rate at which rain fell for each hour of the day.
Columns.....1	2	3	4	5	6	7	8
h h	Miles.		Inches.		Hours.		Inch.
12 to 1 A.M.	11·2	0·88	0·824	0·80	21·7	0·87	0·037
1 „ 2	11·3	0·89	0·865	0·84	23·1	0·93	0·036
2 „ 3	11·3	0·89	0·866	0·84	23·9	0·96	0·033
3 „ 4	11·4	0·90	0·994	0·96	28·7	1·14	0·034
4 „ 5	11·4	9·90	1·081	1·05	28·1	1·13	0·039
5 „ 6	11·5	0·90	1·049	1·02	26·0	1·05	0·040
6 „ 7	11·8	0·93	1·136	1·10	27·3	1·10	0·041
7 „ 8	12·4	0·97	1·193	1·16	27·5	1·10	0·043
8 „ 9	12·9	1·01	0·941	0·91	27·5	1·10	0·033
9 „ 10	13·5	1·06	1·009	0·97	26·3	1·06	0·036
10 „ 11	14·1	1·11	1·110	1·08	24·9	1·00	0·043
11 „ 12	14·6	1·15	0·963	0·93	25·1	1·01	0·038
12 „ 1 P.M.	15·0	1·18	1·145	1·11	24·1	1·00	0 047
1 „ 2	15·2	1·19	1·283	1·25	23·8	0·96	0·054
2 „ 3	15·0	1·18	0·956	0·93	21·0	0·84	0·046
3 „ 4	14·6	1·15	0·960	0·93	23·2	0 93	0·041
4 „ 5	14·1	1·11	1·066	1·03	27·0	1·09	0·041
5 „ 6	13·4	1·05	1·131	1·10	24·3	1·00	0·048
6 „ 7	12·7	1·00	1·081	1·05	26·8	1·09	0·041
7 „ 8	12·3	0·97	0·902	0·90	25·0	1·01	0·036
8 „ 9	11·9	0·93	1·249	1·21	23·0	0·93	0·054
9 „ 10	11·6	0·91	0·926	0·90	21·6	0 87	0·043
10 „ 11	11·5	0·90	0·857	0·83	23·9	0·96	0·035
11 „ 12	11·4	0·90	1·081	1·05	23·5	0·94	0·045

TABLE V.—Whole amount of rain that fell between each hour.
See Plate **P** fig. 1, and Table IV. col. 4.

A.M.	12 to 1.	1 to 2.	2 to 3.	3 to 4.	4 to 5.	5 to 6.	6 to 7.	7 to 8.	8 to 9.	9 to 10.	10 to 11	11 to 12
1852.	1·269	1·242	1·529	1·353	1·160	1·386	1·398	1·555	1·459	1·090	1·389	0·936
1853.	0·607	0·833	0·607	0·766	1·049	0·915	1·089	1·249	1·046	1·185	1·577	0·860
1854.	0·762	0·415	0·556	1·031	1·289	1·247	1·263	1·112	0 593	0·881	0·706	0·936
1855.	0·657	0·971	0·771	0·827	0·827	0·648	0·795	0·856	0·666	0·880	0·768	1·121
Mean	0·824	0·865	0·866	0·994	1·081	1·049	1·136	1·193	0·941	1·009	1·110	0·963
P.M.	12 to 1.	1 to 2.	2 to 3.	3 to 4.	4 to 5.	5 to 6.	6 to 7.	7 to 8.	8 to 9.	9 to 10.	10 to 11	11 to 12
1852.	1·305	1·178	1·359	1·476	1·241	1·262	1·354	0·851	1·594	1·306	1·356	1·545
1853.	1·011	1·173	0·818	0·811	1 047	0·920	1·108	0·788	0·913	0·681	0·631	0·820
1854.	0·820	1·026	0·714	0·776	1·090	0·733	0·836	1·052	1·518	1·065	0·734	0·860
1855.	1·445	1·756	0·933	0·778	0·887	1·608	1·025	0·916	0·971	0·653	0·709	1·100
Mean	1·145	1·283	0·956	0·960	1·066	1·131	1·081	0·902	1·249	0·926	0 857	1·081

Fig. 1.

Whole Amount of Rain that fell between each hour of the day in 1852_3_4_5 See table V.



Mean quantity of RAIN to every 1000 miles of Air from each of the 16 points of the Compass for the years 1852.3.4 & 5.

Fig. 2.

See table III Column 13

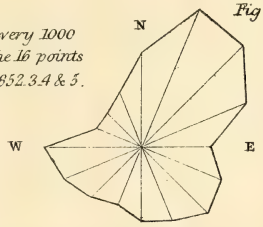


Fig. 3.

Mean hourly horizontal motion of the AIR in miles for each month in 1852_3_4_5 (See table VI.)

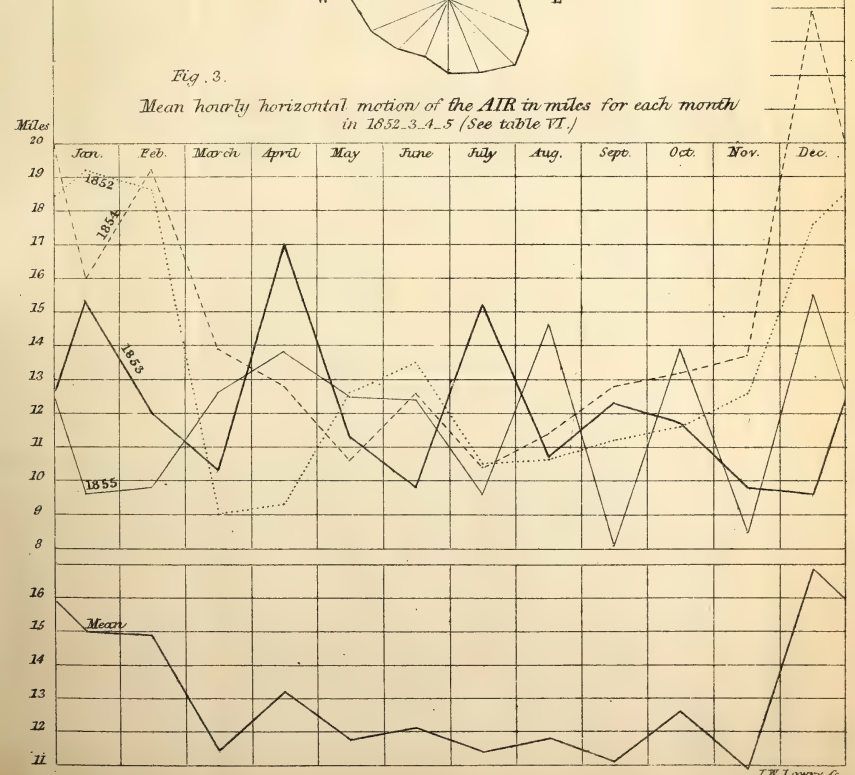


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TABLE VI.—Mean hourly horizontal motion of the air in miles for each month. See Plate P. fig. 3.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1852.	19·2	18·6	9·0	9·3	12·6	13·5	10·5	10·6	11·2	11·6	12·6	17·6
1853.	15·3	12·0	10·3	17·0	11·3	9·8	15·2	10·7	12·3	11·7	9·8	9·6
1854.	16·0	19·2	13·9	12·8	10·6	12·6	10·4	11·4	12·8	13·2	13·7	23·9
1855.	9·6	9·8	12·6	13·8	12·5	12·4	9·6	14·6	8·1	13·9	8·5	15·5
Mean	15·0	14·9	11·45	13·2	11·75	12·1	11·4	11·8	11·1	12·6	10·9	16·85

Winter. Dec., Jan., Feb.	Spring. Mar., Apr., May.	Summer. June, July, Aug.	Autumn. Sept., Oct., Nov.
15·6 miles per hour.	12·1 miles per hour.	11·8 miles per hour.	11·5 miles per hour.

TABLE VII.—Horizontal motion of the air for the years 1852, 1853, 1854, and 1855.

	Miles.	Hours.	Calm hours.	Total number of hours in the year.	Mean rate per hour per annum.
1852.*	114,276	8765	19	8784	13·00
1853.	105,989	8733	27	8760	12·09
1854.	128,283	8756	4	8760	14·64
1855.	103,405	8748	12	8760	11·80
Mean	112,989	8750	15·5	8766	12·90

* Leap year.

The sums of all the changes in the direction of the wind are in the following order :—

N.E.S.W.N.
- 28 revolutions in 1852.
- 24 revolutions in 1853.
- 26 revolutions in 1854.
- 24 revolutions in 1855.

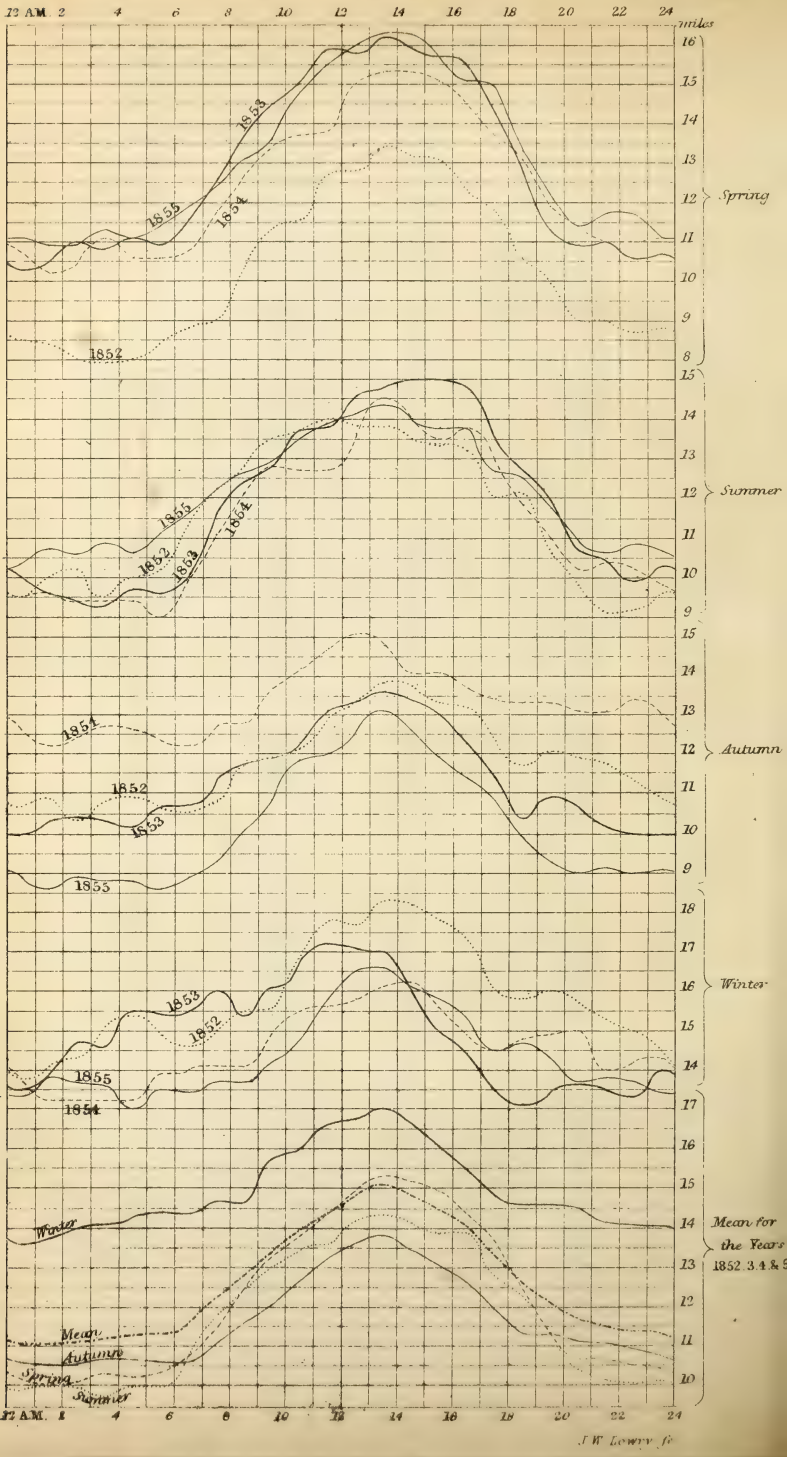
N.W.S.E.N.
- 12 revolutions in 1852.
- 12 revolutions in 1853.
- 2 revolutions in 1854.
- 10 revolutions in 1855.

The excess of the direct over the retrograde motion was therefore—
in 1852, Sixteen revolutions,
in 1853, Twelve revolutions,
in 1854, Twenty-four revolutions,
in 1855, Fourteen revolutions.

The following Table exhibits the extreme pressure of the wind in pounds on the square foot, and the greatest horizontal motion of the air between any one hour and the next hour following, for all the gales during the four years in which the pressure has reached fifteen pounds on the square foot.

Date.	Extreme pressure on the square foot.	Time at which it occurred.	Greatest velocity of the air between any one hour and the next hour following.	Hours between which it occurred.	Direction of the wind.
1852.	Pounds.	h m	Miles.	h h	
January 3	16	7 30 P.M.	50	8 & 9 P.M.	S.W.
,, 4	28	5 30 A.M.	53	5 ,, 6 A.M.	W.N.W.
,, 7	19	2 30 P.M.	50	3 ,, 4 P.M.	W.N.W.
,, 8	18	4 12 P.M.	39	4 ,, 5 P.M.	S.
,, 9	29	3 0 A.M.	62	4 ,, 5 A.M.	W.N.W.
,, 15	16	11 30 A.M.	44	11 ,, 12 A.M.	W.
,, 16	15	0 45 P.M.	40	12 ,, 1 P.M.	W.
,, 21	18	7 30 P.M.	46	8 ,, 9 P.M.	W.S.W.
,, 25	16	4 30 P.M.	27	4 ,, 5 P.M.	S.S.W.
,, 30	17	0 20 P.M.	38	12 ,, 1 P.M.	W.N.W.
February 6	15	4 45 A.M.	44	4 ,, 5 A.M.	W.N.W.
,, 9	18	4 20 A.M.	47	5 ,, 6 A.M.	N.N.W.
,, 16	22	7 42 P.M.	50	7 ,, 8 P.M.	W.N.W.
,, 17	16	7 38 P.M.	47	8 ,, 9 P.M.	W.
,, 18	15	8 30 A.M.	47	6 ,, 7 A.M.	N.W.
May 14	17	9 30 A.M.	49	9 ,, 10 A.M.	W.N.W.
December 25	42	4 45 A.M.	70	4 ,, 5 A.M.	W.S.W.
,, 27	42	6 48 A.M.	71	8 ,, 9 A.M.	S.W.
1853.					
January 6	19	10 40 A.M.	38	6 ,, 7 P.M.	W.N.W.
,, 11	17	10 12 A.M.	47	10 ,, 11 A.M.	W.
,, 12	17	7 50 A.M.	47	9 ,, 10 A.M.	S.W.
February 26	33	11 40 A.M.	60	12 ,, 1 P.M.	N.N.W.
April 1	23	11 0 A.M.	51	12 ,, 1 P.M.	S.W.
,, 7	16	2 30 P.M.	42	2 ,, 3 P.M.	W.N.W.
September 25	37	7 50 P.M.	65	7 ,, 8 P.M.	N.N.W.
,, 26	24	2 12 A.M.	56	2 ,, 3 A.M.	N.N.W.
1854.					
January 20	22	0 42 P.M.	30	9 ,, 10 P.M.	W.S.W.
,, 24	19	2 54 A.M.	34	5 ,, 6 A.M.	S.
,, 25	16	3 36 P.M.	34	7 ,, 8 P.M.	W.S.W.
,, 26	43	10 42 A.M.	53	9 ,, 10 A.M.	W.
,, 27	20	7 24 P.M.	53	7 ,, 8 P.M.	S.W.
February 6	15	0 36 A.M.	43	1 ,, 2 A.M.	W.
,, 8	21	1 6 A.M.	45	1 ,, 2 A.M.	W.N.W.
,, 15	15	4 24 A.M.	40	5 ,, 6 A.M.	N.W.
,, 17	27	8 6 P.M.	56	8 ,, 9 P.M.	N.W.
,, 18	31	3 54 A.M.	56	4 ,, 5 A.M.	W.N.W.
,, 22	18	2 18 P.M.	35	3 ,, 4 P.M.	S.S.W.
October 22	24	6 42 A.M.	44	6 ,, 7 A.M.	N.W.
December 2	16	5 6 A.M.	47	6 ,, 7 A.M.	W.N.W.
,, 3	25	3 54 P.M.	45	11 ,, 12 P.M.	W.N.W.
,, 4	17	1 6 A.M.	43	0 ,, 1 A.M.	W.N.W.
,, 5	16	11 18 A.M.	45	8 ,, 9 P.M.	W.
,, 15	17	8 42 A.M.	44	8 ,, 9 A.M.	W.
,, 22	27	8 12 A.M.	48	8 ,, 9 A.M.	W.N.W.
,, 25	20	1 24 P.M.	48	1 ,, 2 P.M.	W.N.W.
,, 26	16	10 36 A.M.	40	12 ,, 1 P.M.	W.
,, 27	15	2 48 A.M.	43	3 ,, 4 A.M.	W.N.W.
,, 31	15	10 18 P.M.	46	10 ,, 11 P.M.	N.W.
1855.					
January 1	19	1 24 A.M.	48	3 ,, 4 A.M.	W.N.W.
March 1	15	2 0 P.M.	46	2 ,, 3 P.M.	W.N.W.
,, 18	15	2 30 P.M.	46	2 ,, 3 P.M.	W.N.W.
April 10	24	0 5 P.M.	51	0 ,, 1 P.M.	W.N.W.
,, 11	18	2 45 A.M.	48	3 ,, 4 A.M.	W.N.W.
October 24	16	7 15 A.M.	40	5 ,, 6 A.M.	W.

Mean horizontal motion of the AIR between any one hour of the day & the next hour following for each Season for the Years 1852.3.4 & 5. See table VIII.



ıd the next hour following, for each of the seasons,
See Plate Q.

5	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–24
Dec	17·8	17·3	16·0	15·8	16·0	15·7	15·3	15·0	14·5
Mai	13·1	12·3	11·8	10·6	9·9	9·0	9·0	8·7	8·8
Jun	13·3	13·2	12·0	12·1	10·6	9·8	9·1	9·2	9·6
Sep	13·3	13·2	12·3	11·7	12·0	11·9	11·7	11·3	10·9
Dec	15·0	14·4	13·5	13·1	13·4	13·6	13·5	13·3	14·0
Ma	15·7	15·5	14·3	12·8	11·3	10·9	11·0	10 6	10·7
Jun	15·0	14·8	13·5	12·7	11·9	10·7	10·4	9·9	10 3
Sep	13·0	12·2	11·3	10·4	10 9	10·6	10·2	10·0	10 0
Dec	15·6	14·9	14·5	14·8	14·9	15·0	14·0	14·2	14·3
Ma	15·1	14·5	13·7	13·1	11·9	11 4	11·0	11·0	11·1
Jun	13·5	13·8	13·0	11·8	11 0	10 2	10·4	10·2	9·8
Sep	14·1	13·7	13·4	13·3	13·3	13·0	13·1	13·4	13·0
Dec	15·8	15·3	15·3	14·7	14·3	13·7	13·8	13·7	13·4
Ma	15·7	15·1	14·9	13·3	12 2	11·4	11·7	11·7	11·1
Jun	13·7	13·7	12·7	12·5	11·8	10·9	10 7	10·9	10·7
Sep	11·9	11·4	10·8	9·9	9·3	9·0	9·2	9·0	9·1
Dec	16·05	15·47	14·82	14·60	14·60	14·50	14·15	14 05	14·05
Ma	14·90	14·35	13·69	12·45	11·32	10·67	10·67	10 50	10·42
Jun	13·87	13·87	12 80	12·27	11·32	10·40	10·15	10·05	10·10
Sep	13·07	12·62	11·95	11·32	11·37	11·12	11·05	10·92	10·75
M	14·47	14·07	13·31	12·66	12·15	11·67	11·50	11·38	11·33

Mean horizontal motion of the AIR between any one hour of the day & the next hour following for each Season for the Years 1852.3.4 & 5. See table VIII.

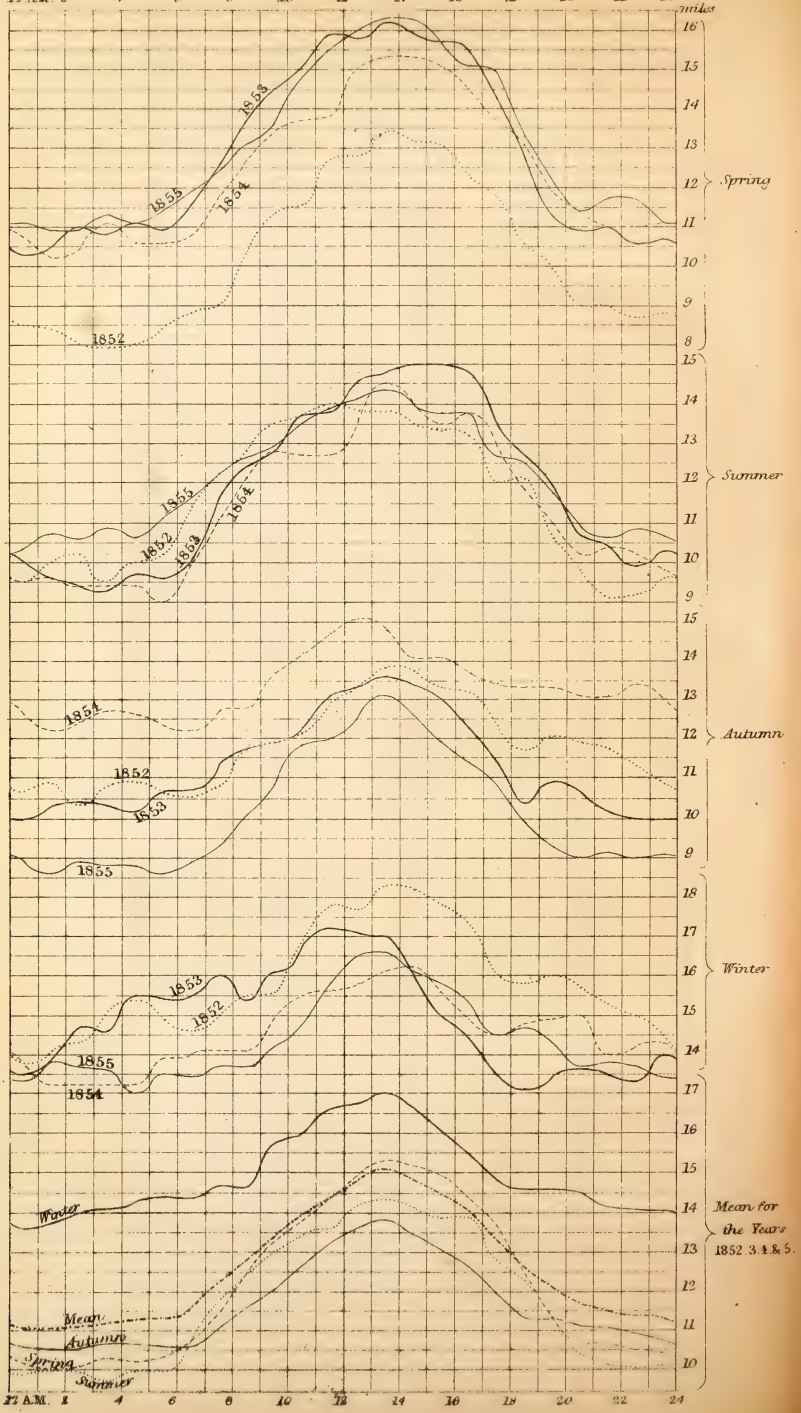


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TABLE VIII.—Showing the mean horizontal motion of the air in miles between any one hour of the day and the next hour following, for each of the seasons, for the years ending November 30, 1852, 1853, 1854, and 1855. See Plate Q.

1851-52	0-1 A.M.	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Dec., Jan., Feb.	13·8	14·1	14·3	15·1	15·4	14·9	14·6	15·0	15·5	15·6	16·9	17·8	17·7	18·3	18·2	17·8	17·3	16·0	15·8	16·0	15·7	15·4	15·0	14·5
March, April, May	8·5	8·4	8·0	7·9	8·0	8·4	8·8	9·0	10·3	11·3	11·6	12·7	12·8	13·4	13·2	13·1	12·3	11·8	10·6	9·9	9·0	9·0	8·7	8·8
June, July, August	9·5	10·0	10·2	9·5	10·0	10·2	11·3	12·2	12·8	13·5	13·7	14·0	13·8	13·8	13·5	13·3	13·2	12·0	12·1	10·6	9·8	9·1	9·2	9·6
Sept., Oct., Nov.	10·7	10·9	10·3	10·8	10·9	10·6	10·5	10·8	11·7	11·8	12·2	13·0	13·4	13·8	13·7	13·3	13·2	12·3	11·7	12·0	11·9	11·7	11·3	10·9
1852-53																								
Dec., Jan., Feb.	13·5	13·9	14·7	14·6	15·5	15·4	15·5	16·0	15·4	16·1	16·8	17·2	17·1	17·0	16·0	15·0	14·4	13·5	13·1	13·4	13·6	13·5	13·3	14·0
March, April, May	10·3	10·5	11·0	10·8	11·1	10·9	11·6	12·6	13·7	14·5	15·1	15·9	15·8	16·2	15·9	15·7	15·5	14·3	12·8	11·3	10·9	11·0	10·6	10·7
June, July, August	10·0	9·6	9·1	9·3	9·7	9·0	10·1	11·6	12·4	12·8	13·7	13·8	14·6	14·8	15·0	15·0	14·8	13·5	12·7	11·9	10·7	10·4	9·9	10·3
Sept., Oct., Nov.	10·0	10·3	10·1	10·3	10·2	10·7	10·7	11·4	11·7	11·8	12·4	13·1	13·4	13·6	13·4	13·0	12·2	11·3	10·4	10·9	10·6	10·2	10·0	10·0
1853-54																								
Dec., Jan., Feb.	13·7	13·2	13·2	13·2	13·2	13·9	14·0	14·1	14·1	13·9	15·5	15·6	15·8	16·1	16·2	15·6	14·9	14·5	14·8	14·9	15·0	14·9	14·2	14·3
March, April, May	10·7	10·2	10·4	11·1	10·6	10·6	10·8	11·8	12·7	13·1	13·7	13·8	15·0	15·3	15·3	15·1	14·5	13·7	13·1	11·9	11·4	11·0	11·0	11·1
June, July, August	9·5	9·6	9·4	9·4	9·4	9·0	10·0	11·1	12·1	12·8	12·7	12·7	13·6	14·5	14·0	13·5	13·8	13·9	11·8	11·0	10·2	10·4	10·2	9·8
Sept., Oct., Nov.	12·6	12·2	12·1	12·7	12·6	12·3	12·2	12·7	12·8	13·7	14·2	14·7	15·1	14·8	14·1	14·1	13·7	13·4	13·3	13·3	13·0	13·1	13·4	13·0
1854-55																								
Dec., Jan., Feb.	13·3	13·8	13·7	13·6	13·0	13·5	13·4	13·7	13·7	14·2	14·8	15·8	16·5	16·6	16·1	15·8	15·3	15·3	14·7	14·3	13·7	13·8	13·7	13·4
March, April, May	11·1	10·9	10·9	11·3	11·1	11·4	11·9	12·1	13·1	13·6	14·8	15·5	16·0	16·3	16·3	15·7	15·1	14·9	13·3	12·2	11·4	11·7	11·7	11·1
June, July, August	10·4	10·7	10·6	10·8	10·6	11·1	11·6	12·2	12·6	12·9	13·6	13·9	14·1	14·3	14·0	13·7	13·7	12·7	12·5	11·8	10·9	10·7	10·9	10·7
Sept., Oct., Nov.	8·9	8·6	8·9	8·8	8·8	8·6	8·9	9·3	10·1	10·8	11·8	12·0	12·6	13·1	12·6	11·9	11·4	10·8	9·9	9·3	9·0	9·2	9·0	9·1
Mean for the years 1852, 1853, 1854, and 1855																								
Dec., Jan., Feb.	13·57	13·75	13·97	14·12	14·27	14·42	14·37	14·70	14·67	15·25	16·00	16·60	16·77	17·00	16·62	16·05	15·47	14·82	14·60	14·60	14·50	14·15	14·05	14·05
March, April, May	10·15	10·00	10·07	10·27	10·20	10·32	10·77	11·45	12·45	13·25	13·80	14·47	14·90	15·30	15·17	14·80	14·35	13·69	12·45	11·32	10·67	10·67	10·50	10·42
June, July, August	9·85	9·97	9·90	9·75	9·92	9·97	10·75	11·77	12·47	13·00	13·42	13·60	14·02	14·35	14·12	13·87	13·87	12·80	12·27	11·32	10·40	10·15	10·05	10·10
Sept., Oct., Nov.	10·55	10·50	10·50	10·65	10·62	10·55	10·57	11·05	11·57	12·02	12·65	13·20	13·62	13·82	13·45	13·07	12·62	11·95	11·52	11·37	11·12	11·05	10·92	10·75
Mean	11·03	11·05	11·11	11·19	11·25	11·31	11·61	12·24	12·79	13·38	13·96	14·46	14·82	15·11	14·81	14·17	13·07	13·31	12·63	12·15	11·67	11·50	11·38	11·33

PROCEEDINGS.

EIGHTH SESSION, 1855-56.

ANNUAL GENERAL MEETING.

St. George's Hall, 18th October, 1855.

The Rev. Dr. Thom, V.P., in the Chair.

The Secretary read the following Report:—

At the commencement of last Session, the Council of this Society felt themselves in a new position, and one that was not free from anxiety and difficulty. The objects and operations of the Society had been extended, the number of meetings had been greatly increased, and prospects of additional advantages had been held out to an enlarged number of members. They have now the satisfaction of stating that their anxiety has been dispelled, and their most sanguine hopes more than realised. They resign the offices which the members kindly entrusted to them, in the confidence that never were the pecuniary or intellectual resources of the Society so abundant as at present; and that its reputation was never more widely extended or placed upon a more secure basis.

Some delay occurred, at the commencement of last Session, before the necessary formalities could be complied with respecting a place of meeting. For local and other reasons, the members were desirous to meet in St. George's Hall; and they felt that the operations of their Society, which promotes no personal or party interest, were quite in character with the general objects of the building, and with the intellectual researches to which it was first devoted. They have the pleasure of stating, what is already known to the members, that the Town Council at once confirmed the recommendation of the St. George's Hall Committee, in granting them suitable accommodation; and they desire, on the part of the Society, gratefully to recognise the kind and handsome spirit in which they were met. It is right to mention too, that the payments made under this head are intended merely to cover the estimated expenses,—such as lighting, heating, porters, cleaning, &c.

In the new arrangements of the Society, one of the experiments tried was to avoid the issue of weekly circulars; which to so large a number of members was both costly and troublesome, and to the majority of no use whatever. Accordingly, a card was issued to every member, for the purpose of showing the evenings of meeting; and an advertisement was inserted in each of three local papers, to show the subjects to be treated of. The experience of the Session has shown that the general plan is a good one, and the retiring Council accordingly recommend it to their successors. They also believe that it may be carried out in the future, with greater economy and increased success.

In conformity with a recommendation contained in the last Annual Report, the List of Members was printed after the 1st of January last, and issued to the members in the form of a separate tract. The new code of Laws, which had been adopted at the extension of the Society, was issued about the same time; and the recent postal regulations will afford increased facilities for transmitting any such documents in future, to distant members.

At the commencement of last Session, the first volume of the Society's Proceedings and Papers was out of print, and for some time, copies of it had been sold at a Guinea

each. The Council resolved to re-print it, especially as it was thought desirable to publish all the volumes of the Society. This has been done, and the volume may now be procured by the members, at less than half its original cost. As every copy of this re-print is intended for sale, the expenditure under this head may be regarded in the light of an investment of a portion of the funds.

With the hope of making the Society more useful, an effort has been made to put the Library and Museum in order, and make their contents thoroughly available to the members. Accordingly, a catalogue of both has been formally made out, and laid before the Council by the Librarian and Curator respectively. The Council are in treaty for a suitable place of deposit for them; and they hope that the arrangements may be completed early in this Session. In the meanwhile, several of the volumes have been bound, and miscellaneous pamphlets have been arranged.

About the middle of the Session, the attention of the members was drawn, "by one of themselves," to the best means of promoting Science in the locality; and the remarks made, though privately issued, were thought to be of such importance as to call for a more extended and formal circulation. The substance of them was therefore, by the direction of the Society, printed in the Proceedings, with a suitable introduction; and an edition from the standing types was distributed with an accompanying circular. This, of course, was a special act, the good effects of which it was hoped would be seen during several Sessions; and the numerous kind responses which it has already elicited have satisfied the Council that this was the exercise of a wise discretion.

In the course of the Session, the Diploma which had been prepared for the use of the members, was issued to all those within the limits of the town delivery; and a small charge was made for the mere cost of paper and printing. The copies for the more distant members—which it was inconvenient to forward—were also prepared; and they may be had on application to the Honorary Curator.

From the moment that the Society extended its objects and operations, it was foreseen that the duties would be so heavy—even those of a routine and mechanical kind—as to require the appointment of an Assistant Secretary. For this the new Laws had sufficiently provided; and one of the earliest acts of the Council of the past Session, was to set apart a specific sum, as a permanent remuneration for the suitable discharge of the duties. They have also appointed a gentleman, in whose zeal and ability they have much confidence; that the labours of the Session may at once proceed regularly, without undue pressure upon any of their Honorary Officers. During the past Session, however, in which many additional duties were necessary, and while the detailed course of proceeding was not yet established, they directed that the same sum should be employed, in procuring such assistance as the circumstances required.

For a detailed account of the business of the Session, the Council refer with pleasure to the seventh volume of Transactions, which has just been issued to the members. They venture to believe, that few volumes, equal in interest and value, have issued from the Liverpool press. It contains more than 70 illustrations; the separation of the Transactions from the Proceedings is an obvious improvement; and the quality of the papers is of a superior kind. Though the past Session was the first occasion on which the members felt themselves called upon to investigate Scientific subjects specifically, it will be seen that Science occupies rather more than one-third of the papers in the Transactions. The Council believe that the formal publication of the volumes will benefit the Society both in a moral and material point of view.

The number of members on the roll of the Society, during the past Session, was as follows—Resident 248, Non-resident 164, lady associates 4; total 416 paying members. There are also 28 Honorary members, to whom the volumes are sent without payment. The estimated income of the Society is about £340; and the Council are of opinion that £250 will in general suffice for the publication of a handsome volume, and for the working expenses of the Society. On this occasion, they felt that they would be justified in exceeding these limits; as they were required not merely to conduct the business of a single Session, but also to lay a secure foundation upon which the labours of their successors may be safely built.

The actual receipts by the Treasurer, during the Session, have amounted to £328 0s. 6d., and the whole Sessional expenses to £316 12s.; leaving a balance to the credit of the Session of £11 8s. 6d. The Council felt that they could not better employ this sum, and the funds which remained in the Treasurer's hands after the re-printing of volume I, than in putting the Society's property in order, and preparing to turn the whole of it to a practical and useful account. Their successors in office will be required to make a small outlay of a similar kind, in printing a Catalogue of the Library, and in procuring suitable furniture; after which, it is expected that the operations and the expenses of the Society will be of a uniform character from year to year.

The volume for the past session is of so much interest, that the Council did not hesitate to print a larger edition of it than of any of the previous ones. Several hundred copies are therefore left in stock, for sale to the public and to present and future members. If the whole of the volumes in stock be estimated at members' prices, their value will be about £700. If to this we add £70 of arrears, and the moderate estimate of £250 for the Library, Museum, and miscellaneous property of the Society, we have in round figures, £1000 worth of property realized during the short period of seven years. The donation of numerous valuable illustrations has contributed in no small degree to the high character which the volumes have sustained; and the Library and Museum are almost exclusively the product of donations, of which an unusually large number were made in the course of last Session.

One of the extra duties discharged during the past Session, has been the extension of that friendly reciprocity which prevails between other learned Societies and this one. Several Societies, chiefly of a scientific character, have expressed their readiness to reciprocate publications with us; and similar efforts will be made till all the principal learned Societies in the kingdom be included in the arrangement; as well as an increased number of those on the Continent and in America. In connexion with this subject it may be mentioned, that the members of the Society undertook an excursion to Shrewsbury, on Thursday the 9th of August, when they were admitted for the day to the Museum and meetings of the Congress of the Archæological Institute. On the part of this Society, and by the direction of the Council, they invited the members of the Institute to meet at some convenient time, within the limits of the two counties of Lancashire and Cheshire. Again, at the meeting of the British Association for the Advancement of Science, held this year at Glasgow, your Delegates had the pleasure to present copies of the last volume of Transactions, for the Library of the Association itself, and also to the distinguished individuals whom they enrolled last year as Honorary Members.

The Council have to deplore, in common with the members at large, the loss of several valued friends who have been removed by death. Besides ordinary members, the Society has lost two of its most prominent officers since the close of the meetings in May. The first of these was the Earl of Sefton, President of the Society, and one of its original members; and the other, still more recently, Archdeacon Brooks, one of the Vice-Presidents from the first, and who on several occasions occupied the chair at the meetings of the Society. The high estimation in which both were held, has been shown by the spontaneous tributes of numerous sorrowing survivors; and the members are fully sensible of the loss which this Society has sustained by the bereavement, as well as the public in general.

In suggesting the names of other gentlemen to occupy the places of those who retire, the Council have acted to the best of their judgment; and they have the gratification of knowing that those who succeed them will have a less difficult task than that which fell to themselves. They retire from office, grateful for the unvarying kindness and support which have enabled them to realise such a measure of success; and confident that the future progress of the Society will be the best commentary on the efforts which they have made in its cause.

The Treasurer's Balance Sheet, signed by the Auditors, was also read.

HISTORIC SOCIETY—Sessional Income, in Account with THOS. AVISON, Esq., Treasurer.

	£	s.	d.	£	s.	d.
I.—THE VOLUME.						
Printing, binding, &c. ..	153	13	6			
Illustrations	31	6	9			
Authors' copies	4	10	0			
				189	10	3
II.—SESSIONAL CHARGES.						
Circulars and cards.....	5	19	0			
List of Members.....	7	17	6			
Postage of circulars, &c..	8	1	7			
Tea, coffee, & attendance	11	18	0			
Use of St George's Hall.	15	15	0			
Advertisements	10	0	0			
Assistant Secretary.....	50	0	0			
Delivery of circulars, &c.	3	9	11			
Collector and Accountant	9	13	0			
Messages, parcels, miscellaneous	4	7	9			
				127	1	9
				£316	12	0
Balance to the credit of the Session..				11	8	6
				£328	0	6

	£	s.	d.	£	s.	d.
Arrears	22	1	0			
Entrance fees	9	9	0			
Annual subscriptions	261	9	0			
Life compositions	26	5	0			
Books sold	8	16	6			
				328	0	6
				£328	0	6

Examined by

PETER R. M'QUIE,
SAMUEL GATH, } Auditors.

HISTORIC SOCIETY—Property and Cash, in Account with THOS. AVISON, Esq., Treasurer.

	£	s.	d.	£	s.	d.
I.—PERMANENT CHARGES.						
Glass cases and fitting	26	4	9			
Books bought, binding, &c.	4	10	2			
New minute and receipt books	4	7	0			
New Laws	6	15	0			
Stationery	5	18	6			
				47	15	5
II.—REPRINTING VOLUME I.....				54	14	6
III.—SPECIAL EXPENSES.						
Annual Report (separate), Excursion circulars, Science in Lancashire and Cheshire, and Mr. Wright's Lecture.....				18	15	5
				£121	5	4

	£	s.	d.	£	s.	d.
Balance in Treasurer's hands, last October	97	5	11			
Balance to credit of last Session	11	8	6			
				108	14	5
Balance due Treasurer				12	10	11
				£121	5	4

Examined by

PETER R. M'QUIE,
SAMUEL GATH, } Auditors.

It was moved by J. T. DANSON, F.S.S., seconded by THOMAS MOORE, SEN., Esq., and resolved,—

That the Report be adopted; and that it be printed and circulated with the Proceedings of the Society.

It was moved by JOHN POOLE, Esq., seconded by JOSEPH BOULT, Esq., and resolved,—

That the Abstract of the Treasurer's Accounts now read, be passed and printed with the Report.

It was moved by Dr. Hume, seconded by David Buxton, Esq., and resolved,—

That the thanks of the Society be given to all those gentlemen who have contributed Illustrations, in whole or in part, for Volume vii; and especially to Mr. Mayer, the Honorary Curator of the Society.

It was moved by Thomas Gray, Esq., seconded by Dr. Macintyre, and resolved,—

That the thanks of the Society be given to the retiring Council and Officers, for their services during the past Session.

It was moved by Joseph Boult, Esq., seconded by J. T. Danson, F.S.S., and resolved,—

That the thanks of the Society are especially due to the Rev. Dr. Hume, for his invaluable services in the office of Honorary Secretary, since the Society was established; by which its present position has been mainly secured.

A Ballot having been taken for the Officers and Sectional Members of Council, by means of the slips forwarded to the members, the result was announced by the Chairman. (See p. ii.)

On the motion of the Rev. Thomas Moore, M.A., a vote of thanks to the Chairman was passed by acclamation.

1*st November*, 1855.—MISCELLANEOUS MEETING.

J. T. Danson, F.S.S., V.P., in the Chair.

The following Donations were laid upon the table :—

From the Society. Proceedings of the Literary and Philosophical Society of Liverpool, during the 44th Session, 1854-55. No. 9.

From the Society. Proceedings of the Liverpool Architectural and Archæological Society, Volume II, Part 1, 1850-51.

From the Society. Transactions, Laws, Bye-Laws, and Sixth Annual Report of the Liverpool Chemists' Association, with list of the officers and members, also a Catalogue of the Books belonging to the Library, and a list of Donors to the Museum fund, 1855.

From the Author. Report of the General Board of Health, on a Preliminary Inquiry, respecting Great Crosby and Litherland, in Lancashire. By Robert Rawlinson, C.E., F.G.S., 1855.

From John Mather, Esq. Accounts of the Trustees of the Liverpool Docks, for the Years ending June 1838, '39, '40, '41, '42, '45, and '47.

A List of Voters in the Southern Division of the County Palatine of Lancaster, for the Hundred of West Derby.

From Dr. Hume. Geological Notices of the Environs of Glasgow, the shores of the Clyde, and the Island of Arran. By James Bryce, jun., M.A., F.G.S., 1855.

Account of the Public Dinner given to Charles Roach Smith, Esq., at Newport, Isle of Wight, on Tuesday, August 28th, and of the Conversazione at Ryde, August 29th, 1855.

From the Author. Collectanea Antiqua. By Charles Roach Smith, F.S.A., Vol. IV, Part 2.

From the Author. Views of Liverpool, about the year 1655 and in 1855, with Key. By Augustus Harding. Dedicated to the Historic Society.

Mr. Bloxam exhibited the first impression of an accurate portrait of Mr. Russell, the Crimean Correspondent of the *Times*.

This watch belonged to Prince Albert's mother, the Duchess of Saxe-Coburg, and was purchased at her sale in 1852. It was made at Geneva, by Abraham Carl Liatte.

The enamelled watch No. 6, is by an unknown artist. The exterior is very minutely finished with classical subjects on the front and back, but the landscapes in the interior are less beautiful. The works were made at Amsterdam by Josephus Norris.

The enamelled watch No. 7 is interesting as containing in the inner case a portrait of the Earl of Rochester, and on the dial one of Charles II. They are probably the work of a less eminent artist than Piu or Huoud, but are nevertheless of considerable merit. The works are by Robert Dingley, London.

No. 8 is an alarum pocket clock. The case is made of brass, with open work for the emission of sound. The maker's name is Pierre Maingot, Paris—date probably early in the 17th century. It has a curious key.

No. 9 an alarum watch of silver. The case is cut in an intricate pattern, for the emission of sound. Date, the end of the 17th century.

No. 10, a gold watch made in Liverpool during the latter half of the last century, by Ralph Eden. The outer case is much older, and of the kind fashionable during the reign of Queen Anne.

The following Paper was then read :—

On the Saxon Element in the Diction of English Poetry. *By David Buxton, Esq.**

8th November, 1855. LITERARY SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following Donations were laid upon the table :—

From the Society. Proceedings of the Society of Antiquaries of Scotland, Part iii, 1855.

From the Society. Journal of the Society of Arts and of the Institutions in Union, Vol. III, Nos. 147, '48, '49, '50.

From the Society. Journal of the Statistical Society, parts 1, 2, and 3, for 1855.

From Lord Londesborough. Miscellanea Graphica, parts 5 and 6.

From James Newlands, C.E., Borough Engineer. List of Sewers in the Borough of Liverpool, 1855.

From Robert Rawlinson, C.E., F.G.S. Report of the Committee of Scientific Inquiries, in relation to the Cholera Epidemic of 1854.†
Appendix to ditto.
Letter from the President of the Board of Health, accompanying a Report of Dr. Sutherland, on the Cholera of 1854 in London.
Report on the Results of the different modes of Treating Cholera in London.
Report on the Results of the different modes of Treating Cholera in the Provinces.
Report of the Medical Council to the President of the General Board of Health, in relation to the Cholera Epidemic of 1854.

Dr. Hume exhibited an ancient sheep-bell, which had been dug up near Llanbadrig, in Anglesea. It is identical in form with the hawk's bell of heraldry; and is supposed to belong to the 15th century.

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* Transactions, p. 35.

† Mr. Sansom drew attention to twenty-seven beautifully executed plates in this volume. They represent the microscopic appearance of the water with which various parts of London are supplied. This led to a notice, by Mr. Boult, of some peculiarities of the Liverpool water.

Dr. Hume also drew attention to a pentagonal crystal of stone, about two inches long, and half an inch in diameter. A stone at the iron works of Ystalyfera, near Swansea, had been nearly in a state of fusion for a considerable time; and on the fire which it sustained being blown out, it split into crystals, of which this was one.

Mr. Danson, V.P., read some remarks on the Paper of Mr. Buxton, which had been laid before the Society at the previous meeting. See note, page 48.

The following Paper was then read :—

LIVERPOOL: MEMORANDA TOUCHING ITS AREA AND POPULATION, DURING THE FIRST HALF OF THE PRESENT CENTURY. *By J. T. Danson*, F.S.S., V.P.*

15*th November*, 1855. SCIENTIFIC SECTION.

THE REV. DR. THOM, V.P., in the Chair.

Mr. Thomas Kyffin Roberts, of St. Asaph, was duly elected a Member of the Society.

The following Donations were laid upon the table :—

From the Society. Journal of the Royal Geographical Society, with maps and illustrations, vol. XXIV, 1854.
Address at the Anniversary Meeting of the Royal Geographical Society, by the Earl of Ellesmere, K.G., D.C.L., President.

From Professor Sedgwick. A Synopsis of the Classification of the British Palæozoic Rocks, with a systematic description of British Palæozoic Fossils, by Professor Sedgwick, of Cambridge, and Professor McCoy, now of Melbourne University. 2 vols. 4to.

From Sir John Richardson, C.B., M.D. Magnetical and Meteorological Observations at Lake Athabasca and Fort Simpson, by Capt. J. H. Lefroy, Royal Artillery, and at Fort Confidence, in Great Bear Lake, by Sir John Richardson. Printed by order of Government, 1855.

From the Author. Four Papers, viz.: (1) On the Action of Organic Acids on Cotton and Flax Fibres; (2) On the Action of Gallic and Tannic Acids in Dyeing; (3) On the Adulteration of Oils, by F. Crace Calvert, F.C.S., Professor of Chemistry, Manchester; and (4) On Alloys, by Professor Calvert and R. Johnson, Esq., Manchester.

From the Author. Paper on Ice Impediments in Australian Voyages, by John Thomas Towson, Esq.

From J. C. Dalton, Esq. Third Annual Report of the Committee of the Free Public Library and Derby Museum of the Borough of Liverpool; October, 1855.

From William Blackmore, Esq. Minutes of Evidence on the Liverpool Election Petition, taken before the Select Committee, with the Proceedings of the Committee, 1853.

From Thomas Moore, Sen., Esq. Newspaper Slip—Advice to Emigrants to New Zealand.

Mr. Whitehead exhibited a very interesting specimen of the shell known as *Voluta punctata* (Swainson), or *Aulica punctata* (Gray).

Mr. Sansom exhibited a print from a highly magnified photograph of *Navicula angulata*. It was supposed to be magnified 16,000 diameters, and the spots formerly supposed to be lines were seen as dots of a hexagonal shape. These dots had been

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* Transactions, p. 23.

measured, and were found to be 52 thousandths of an inch in diameter, in their natural state.

Dr. Hume exhibited a portable Gyroscope, lent for the purpose by Mr. Chadburn of Lord street, and drew attention to the various motions of which it was susceptible. He also explained to the meeting the scientific* principles which were thus illustrated.

Mr. H. Meeson, on the part of Mr. Agnew, of Manchester, laid before the Society a selection of sixteen Photographs, from the series of Fenton's Crimean Illustrations. They consisted of six portraits of Generals, and ten Landscapes and Groups, in and near Balaclava.

The following Paper was then read:—

Description of a Patent Abacus. *By J. Gregory Jones, Esq.*

This Abacus was invented and patented by Mr. Jones, who is one of the officers of the Collegiate Institution. It was placed in the meeting-room. The object of it is to familiarize the pupils of our Schools with the operations of Addition; and thus to save the time of both teacher and pupils, or to afford greater leisure for the explanation of principles. By the simple movement of a slide, a vast number of combinations can be obtained, each of which may be distinguished with facility, by a number, for reference to a printed Key. This states the correct sum of every arrangement of columns of figures, and thus affords an easy means of comparing the result which the pupil produces. The practical mode of using the instrument was shewn; and some of those to whom its use had been familiar, displayed great celerity and accuracy in the process of adding.

6th December, 1855. ARCHÆOLOGICAL SECTION.

Samuel Gath, Esq., in the Chair.

The following gentlemen were duly elected members of the Society:—

William Allcard, Esq., Bank House, Warrington.
Edward Batty, Esq., 34, Stafford Street.
J. Black, M.D., F.G.S., Southport.
John Bowes, Esq., Warrington.
F. Crace Calvert, F.C.S., &c., Royal Institution, Manchester.
James L. Crosse, Esq., 6, Sandon Terrace.
Edward Estill, Esq., Orange Court, Castle Street.
David Johnson Macfie, Esq., Bachelor Street, Dale Street.
John Newton, Esq., 15, West Derby Street.
William R. Sandbach, Esq., Bank Buildings, Cook Street.
John R. Shawe, Esq., Arrowe, Woodchurch, Cheshire.
George F. Wilson, F.R.S., F.S.S., Belmont, Vauxhall, London.

The following Donations were laid upon the table:—

From the Institute. The Archæological Journal, published under the direction of the Central Committee of the Archæological Institute; volumes vi, vii, viii, ix, x, xi, and parts 1 and 2 of volume xii.

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* These experiments were exhibited by M. Foucault, the inventor, at the Meeting of the British Association at Liverpool; and an account of them is given in the Report for that Meeting, Proceedings, p. 56, under the title "*Nouveiles Experiences sur le Mouvement de la Terre au Moyen du Gyroscope.*" An account is also given in the *Comptes Rendus de l' Académie des Sciences.* On March 12th, 1855, the nature of these experiments was explained at the Ashmolean Society, Oxford, by the Rev. Robert Walker, M.A., Reader in Experimental Philosophy. Allusion was also made to them by the President, Lord Wrottesley, at the Anniversary Meeting of the Royal Society, November 30th, 1855, in presenting the Copley Medal to M. Foucault.—*Proceedings of the Royal Society*, volume vii, p. 574.

From the Cambrian Archæological Association. Archæologia Cambrensis, for July and October, 1855. Third series, Nos. 3 and 4.

From the Author. British Antiquities; their present treatment and their real claims, by A. H. Rhind, F.S.A. London and Scotland. Pamph., 1855.

From the Editor. Parallel Passages from two Tales, elucidating the origin of the Plot of Guy Mannering, edited by Gilbert James French, Corr. F.S.A., Scot., and printed for presentation. Pamph., 1855.

From the Rev. P. S. Dale, M.A. Thirteen Pamphlets, principally from the earlier press of Liverpool, consisting of the following:—

The Dispensary, a Poem, by James Clarke; Liverpool, 1783. A Sermon, preached before the Mayor and Corporation, at St. George's Church, Liverpool, by the Rev. Samuel Renshaw, M.A.; London, 1793. Miscellany Poems on moral subjects; Chester, 1750. A Sermon preached at the Assizes held at Lancaster, 19th August, 1787, by the Rev. Thomas Wilson, of Clitheroe, author of the Archæological Dictionary; Leeds, 1797. Christian Knowledge and Universal Privilege, a Sermon preached at the opening of the Warrington Blue Coat School, by the Rev. Edw. Owen, M A.; Warrington, 1779. A Charge delivered to the Clergy in the Diocese of Chester, in 1814, by Geo. H. Law, D.D., Bishop; Chester, 1814. Assize Sermon preached at York, by the Rev. John Vause, M.A.; Liverpool, 1811. Commencement Sermon at Cambridge, by Law, Prebendary of Carlisle, July 1, 1804. Charge delivered to the Clergy of the Diocese of Chester at the primary Visitation, 1825, by C. J. Blomfield, D.D., Bishop; London, 1825. Remarks on Mr. Lancaster's System of Education, by William Fell, Teacher, Warrington; London, 1811. Pastoral Thoughts on the Aspect of the Times, in four Sermons, preached at St. George's, Everton, by the Rev. P. Buddicom, M.A., F.S.A.; London, 1830. Three Sermons on Article xvii of the Church of England by the Rev. Edward Hull, M.A.; Liverpool, 1821. A Sermon preached at Wigan Church, and published by request; Liverpool, 1753.

Dr. Hume exhibited a gutta percha impression of a leaden seal, found at Nantwich, in Cheshire, in May last. The original was about six feet beneath the surface of the Crown Inn yard. It is now in the possession of Mr. H. Ecroyd Smith, author of the Reliquiæ Isurianæ. The legend is SIGILL SIMONIS FIL RAN (ulfi).

Dr. Hume also drew the attention of the Society to some numbers of the *Illustrated Sydney News*, which seemed to have been of great interest as an exposition of Colonial life. The 90th and concluding number contained three Australian scenes, and four illustrations of native Zoology.

An ancient vase was handed round for inspection, the property of Valentine Bird, M.D., of Seacombe. It was found in South America, in the excavations for the Lima and Arica Railway, and contained human bones in a state of great preservation.

Mr. Mayer exhibited an elaborately-made Tea Caddy of the usual form, but very large. The ground work is wood, over which is laid in mosaic work a variety of patterns in squares and stars, and amongst the rest are masonic emblems—the level, rule, compasses, pillars, sun, moon, &c. On the panel in the front are two subjects in engraving from copper plates, one representing the fable of the bundle of sticks, and the other a jolly looking landlord, whose appearance shews that he has paid attention to creature comforts, some of which surround him, whilst he is very anxiously watching the tap of a large hogshead of ale which is running into one of the brown jugs of the day. The whole of the ornaments are composed of pottery work, and display great ingenuity in the adjustment of the pieces and the arrangement of the colours. Probably all which were then known are displayed; they thus shew in an interesting manner the state of the manufacture of earthenware in Liverpool about 1780.

Mr. Mayer also exhibited an Ivory Comb measuring 7 inches long by 5¼ broad. It is of the usual form, of the large mediæval specimens preserved in the cabinets of

antiquaries. The teeth are placed on each side, and are 1¾ inch long; those on one side are extremely heavy and thick. At each end of the teeth are compartments filled with scrolls and flowers. Extending the whole length of the centres are two subjects in high relief, one of them representing a hunting scene, and the other a hawking scene. From the costumes it is thought to have been made about the period of Mary Queen of Scots.

Mr. Gray exhibited a copy of Hogg's Queen's Wake, which had been presented by the author to his nephew, Mr. James Gray. It was interesting from containing in the margin an autograph key to the modern poets, indicated under the bardic titles.* Mr. Gray exhibited with this, the Album of Miss M. A. Browne, (the late Mrs. James Gray), containing original poems and drawings of great interest; also a volume of MS. letters from the various literary persons with whom she had been in correspondence, including many from Miss Mitford, Mrs. Hofland, &c.

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* This was the edition of 1822, which contained numerous additions to the original Poem. The following are the principal persons indicated, and the respective descriptions of them :—

1st Bard—David Rizzio.

"The stranger youth,
The gaudy minstrel of the south,
Whose glossy eye and lady form
Had never brav'd the northern storm."

8th Bard—Mr. Wm. Tennant, Author of "Anster Fair," afterwards Professor in the University of St. Andrews.

"The Eighth was from the Leven coast."

"Mounted the Bard of Fyfe on high,
Bushy his beard and wild his eye;
His cheek was furrowed by the gale."
* * *
"Calm and benignant as a child,
Yet spoke to all that viewed him nigh;
That more was there than met the eye."

9th Bard—Professor Wilson.

"His locks were fair as sunny sky,
His cheek was ruddy, bright his eye,
His speech was like the music's voice
Mixed with the cataract's swaying noise;
His harp strings sounded wild and deep,
With lulling swell and lordly sweep."

10th Bard—"The Author, James Hogg."

"The Bard on Ettrick's mountain-green
In nature's bosom nursed had been."

15th Bard—"The Rev. James Gray, afterwards my brother-in-law.—J. H."

"The next was bred on southern shore,
Beneath the mists of Lammermore.
* * * *
Well toned his voice of wars to sing,
His hair was dark as raven's wing;
His eye an intellectual lance
No heart could bear its searching glance;
But every Bard to him was dear,
His heart was kind, his soul sincere."

16th Bard—"Allan Cunningham."

"The next was from a western vale,
Where Nith winds slowly down the dale;
Where play the waves o'er golden grain,
Like mimic billows of the main.
Of the old elm his harp was made,
That bent o'er Cluden's loneliest shade.
* * * *
That Harp could make the matron stare,
Bristle the peasant's hoary hair,
Make patriot breasts with ardour glow,
And warrior pant to meet the foe."

Mr. Mayer read the following transcript of a letter, the original of which is in the possession of J. Y. Akerman, Esq., Sec. S.A. It was written by Cornet Pease to his brother-in-law, Captain Adam Baynes, of the Parliamentary Army. The brother Richard mentioned in the postscript, was a Captain Richard Pease, also a Roundhead officer. The letter alludes to the unfortunate termination of Sir George Booth's rising in favour of Charles II.

D^{r} S^{r}

I suppose ere this you have an acc^{t} of the the (*sic*) great victory obtained with little bloodshed upon Friday last. This day Chester was surrendered to my Lord Lambert without any termes but his own, some of the enimyes horse went hence last night and this morning to the number of 300 to chirt castle in Wales under the comand of S^{r} Thomas Middleton, the owner of it, to which place our Troope and 3 more of my Ld^{s} Regim^{t} & some foote are march^{g} this afternoone, tomorrow god willing I purpose to be with them, they by this night at Rixam. L^{d} Kilmurrey, S^{r} Will. Neale and many other persons of quality are taken, I desire you will please to prsent my choyce respects to all your sweet babyes and my dear sister & all friends & accept the same yourselfe

Frm

S^{r}.

Your most affectio: & obliged Brother
J. Pease.

Chester, Aug. 25. 1659.

S^{r}

D^{r} Devevier* is here and presents his respects to you and yo^{rs} pray remember me to Bro. Richard and his wife if they be in towne.

Mr. Gray exhibited an interesting portrait of Milton, apparently of the date 1650 to 1670, painted within the separable sides of a Spanish dollar.

In illustration of his Paper to be read, Mr. Stonehouse exhibited a view of Dalton Castle, and a plan of the Pile of Fouldrey. Mr. H. Johnson also exhibited specimens of Iron Ore from Cleator, near Whitehaven.

The Secretary announced that a room had been taken for the reception of the Society's Library and Museum, at No. 57, Ranelagh Street.

The following Paper was then read:—

A Day in Low Furness. (Abridged.) *By James Stonehouse.*

The districts of High and Low Furness abound with objects of interest, in which the antiquarian, the geologist, the botanist, and the artist, would delight. Low Furness is bounded by High Furness on the north, by the Leven river and Morecambe Bay on the east, by the Irish Sea on the south, and by the Duddon river on the west. The boundary line between High and Low Furness may be drawn from Aldingham on the Leven to Kirkby Ireleth on the Duddon. Furness was conquered by Agricola in his second campaign, A.D. 79, and it is said that at Dalton there was a Roman Station. The Romans made a road through Furness, remains of which were first discovered in March, 1774, near Mountbarrow House, and under Bardsea park wall another portion of it was found. In 1813, an ancient road, paved with large stones, was met with at the head of Goldmire. It would seem, therefore, that the Romans entered Furness by Conishead, whence their road proceeded to Thornwest, through Streetgate, to the place where it joins the new turnpike road to Ulverstone. Hence its direction is by Lindell to Dalton. At the cross at Dalton it turns up Scalegate to Duddon Sands.

After the Romans, the Britons occupied the country; the Danes succeeded, as the numerous Danish words still prevalent in the vicinity shew. Next the Saxons, who were followed by the Normans. Though the name of Furness is not mentioned in Doomsday Survey, yet numerous places in it are set down, as well as the owners

* Some letters of this individual will be found in the Proceedings of the Society of Antiquaries.

of lands, and the extent of territory held by each. It was in a highly cultivated state, as the Survey states that sixty ploughs were owned by the chieftains and their tenants.

We first visit Walney Island, about ten miles long by one in breadth. It contains two hamlets, North Scale and Bigger, and between them is a small Chapel of Ease to Dalton. At Bigger there is an ancient dike, constructed originally by the monks of Furness, with great care, to ward off the sea. It is a mile in length, with a foot walk on the top. There are other dikes, which the islanders are obliged to keep in repair, as they hold their lands on the condition that if any are destroyed by the sea, the remainder must pay the rent of those which have disappeared, as well as their own. The sea broke over in 1774, and in 1796, and occasionally since. About fifty years ago, some curiously shaped cannons and other war implements were discovered, cast on the island probably from a wreck, in the time of Richard II.

There is a revolving light on the south end of the island. From Walney we proceed to Fouldrey, where is the fortress known as the Pile of Fouldrey Castle, constructed (Camden) about 1327, as a refuge for the monks of Furness in time of need. The published views of this ruin do not convey the best idea of what it is like. Fouldrey island has to a great extent been washed away. The castle covered about three acres, and consisted of a keep or central tower, an inner wall, a moat, now nearly filled up through lapse of time, and an outer wall. The ruins are curious, and deserve a detailed examination. Lambert Simnel landed here in 1487, and proceeded thence to Swarthmoor and Cartmel, whence he marched to Stoke-on-Trent. Of the Furness gentry he was joined by Sir Thomas Broughton, who was killed in the battle, or disappeared. Mr. Roby founds a story on this circumstance in his "Traditions of Lancashire." From the Pile of Fouldrey we proceed to Furness Abbey, which is four miles distant from the railway station on Roe Island. The ruins are said to stand on sixty-five acres of ground, and are situated in a glen called Beckansgill, or the glen of the deadly nightshade. The abbey, dedicated to St. Mary, was founded on the nones of July, 1127, by Cistercian monks, with Ewan, their first abbot. It was second in importance only to Fountains in Studley Park. At the dissolution in 1537, it had a revenue of £805 16s. 5d., exclusive of the woods, pastures, fisheries, saltworks, mills, &c. Its hospitality was great, and education was not neglected. Of the church there are remains of the chancel and vestry, the north and south aisles, the lofty arches of the nave, and the belfry or western tower, from the top of which there is a fine view of the surrounding country. The sedilia, carved, as it is supposed, by Italian artists, form some of the finest specimens extant in freestone. Our space does not admit a more detailed notice of this splendid ruin.

Dalton Castle, distant from the abbey about a mile and a half, was erected by the Furness abbots for defence and for civil purposes. It is a square block of building, and its walls are six feet thick. In front of it the market was held till it was removed to Ulverstone. Dalton is supposed to have been a Roman station, but the examination of a mound near the church did not lead to any results. Some copper weapons, probably celts, were discovered in the vicinity many years ago; and in 1804, a coin inscribed with the word SOL in Roman characters on each side. In 1799, in sinking a shaft for iron ore near Dalton, there was found at the depth of thirty feet, the trunk of a large oak tree, which had assumed the colour of ebony. The church bears date about the fifteenth century. In it there is a large stone font, curiously carved, which was brought from the abbey. Mention is made in the "Tatler" of a great festival at this place, at which a great hunt took place on the morning, and a grand ball of the neighbouring gentry in the evening.

From Dalton we proceed to Lindell, where are extensive iron mines, some of which have been worked for centuries. The Romans were acquainted with the fine iron ore of this district, some of which yields 75 per cent. of iron. The Britons, Saxons, &c., in their turn knew their value, and the abbots of Furness Abbey had the sole management and profits of the mines. At Lindell Moor, on the 28th Sept, 1643, the king's forces were beaten by the parliamentarians.

From Lindell we proceed eastward to Urswick, which consists of Little and Great Urswick. At the former is a curious place called the Stone Walls, situated in some

fields at the back of the Swan public-house opposite the post-office. Large quantities of stones are found in several fields, lying scattered about, and preserving now but little of their original condition. It is difficult to trace the plan of the structures that may have existed in bygone days. Are they druidical remains? Are they the remnants of some Sistuntian village? Or some temple of a primitive race?

Urswick Church is a small edifice, erected about fifty years after the Conquest, and is dedicated to St. Mary-in-the-Field. On the western side there is a much mutilated figure of the virgin and child. The bell bears an inscription to the effect that it was the gift of William de Harrington and his lady Margaret. The interior of the church has been lately decorated. Stained glass windows have been put in the eastern end and southern side, and encaustic tiles placed in the chancel. The monks of Furness owned the advowson before the demolition of the monastery. In 1774 a curious copper vessel, weighing three pounds two ounces, was found near the church, and in 1798 a silver coin of Otho.

From Urswick we proceed to Birkrigg, a moorland overlooking Morecambe Bay—the village of Bardsea stands at its base. From the most elevated point of Birkrigg a most extensive view may be had, embracing the Isle of Man, Cumberland, Westmorland, and the mountains of Lancashire. The moor is scattered all over with stones of every size and shape, presenting a most singular appearance. Are not these stones the remains of some town of yore, whose name and inhabitants have been forgotten?

At Aldingham there is a curious remnant of antiquity, viz., a mound and ditch and an enclosure. The mound, which is about thirty feet high is to a considerable extent washed away by the sea. It has been considered to be the mote hill, or place of assembly of the lords of Aldingham. It is said that Aldingham Church stood in the centre of the village at the conquest, and that the encroachments of the sea have left it in its present position, and several villages in its vicinity are supposed to have been swallowed up in the sea. Proceeding southward we approach the ruins of Gleaston Castle, the residence and fortress of the lords of Aldingham. In the beginning of Mary's reign it belonged to the Duke of Suffolk, father of Lady Jane Grey. It well deserves a visit by the antiquary. The way back to Pile Harbour presents no object worthy of much note, except the picturesque village of Leece scattered round a large tarn.

13*th December*, 1855. LITERARY SECTION.

J. T. Danson, F.S.S., V.P., in the Chair.

The following gentlemen were duly elected Members of the Society:—

H. C. Barton, Esq., Fishergate, Preston; and F. Steiner, Esq., Hyndburn, Accrington.

James Aspinall Tobin, Esq., late Mayor of Liverpool, having signified his wish to remain a Member of the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following Donations were laid upon the table:—

From the Society. Transactions of the Philological Society, volumes I, II, III, IV, V, and VI; Transactions eleven parts, for 1854; Transactions, parts 1 to 6, for 1855. Appendix, containing List of Members, Laws, &c.; Dictionary of the Dakota Language, in two parts, 1st English, Circassian, Turkish; 2nd Circassian, English, Turkish, with a preface, and a table of the alphabet adopted to express the Adee-Ghey language.

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, vol. XII, (second series), 1855.

From W. B. D. D. Turnbull, Esq., Hon. Mem. Several copies of an Essay on Ships' Compasses, by Thomas Allan, C.E., London.

From the Abbé Cochét. Notice Biographique sur M. Nell de Bréauté, Conseiller General de la Seine Inferieure.

From Charles Roach Smith, F.S.A. Duplicate of the Abbé Cochét's Memoir of M. Nell de Bréauté.

Mr. Marsh exhibited several Autographs, lent for the purpose by Mr. Jones, of Nantwich. They were (1) Two Reprieves, signed by Charles I; (2) A State Document, bearing the signature of Sir Walter Raleigh; (3) A Warrant under the hand of the lord keeper William, Bishop of Lincoln, the Earl of Arundel and Surrey, Viscount Conway, Sir Thomas Edwardes, Sir John Suckling, Sir John Coke, and Sir Richard Weston, directed to Bridgeman, Bishop of Chester, whose signature is endorsed, relating to a Popish conspiracy in the year 1625; (4) A Letter from Lady Hatton, widow of Edward Coke, to Sir Randolph Crew, requesting his arbitration in a dispute between herself and her late husband's executors.

Dr. Hume exhibited a pair of Wedgwood Cameos, belonging to a gentleman in Seacombe, representing Josiah Wedgwood and his Wife.

The Chairman announced the death of Joseph Brooks Yates, Esq., F.S.A., F.R.G.S., who for more than forty years had been in some way connected with the progress of Literature and Science in this neighbourhood. He thought the Society might with great propriety put upon record, their sense of his loss.

Another member, at the request of the Chairman, stated some facts* respecting Mr. Yates's connection with the local literature.

It was then moved by Thomas Sansom, A.L.S., seconded by the Rev. Thomas Moore, M.A., and resolved—

That this Society learns, with deep regret, the death of Joseph Brooks Yates, Esq., and takes this the first opportunity that presents itself, to express on behalf of its members, the deep sense of his services to the Literature and Science of the district, a feeling which they possess in common with all who are or have been connected with those pursuits.

The Secretary was directed to forward a copy of this resolution to the family of the deceased gentleman.

The following Paper was then read:—

THE ENGLISH POOR LAW SYSTEM, VIEWED IN RELATION TO EDUCATION AND MORALS; *By the Rev. Thomas Moore, M.A.*†

20th December, 1855. SCIENTIFIC SECTION.

HENRY DAWSON, Esq., in the Chair.

The following gentlemen were duly elected Members of the Society:—

William Dobson, Esq., Chronicle Office, Preston.
George Grazebrook, Esq., 40, Canning Street.
The Rev. P. R. Robin, M.A., Barnston, Cheshire.
William Turner, Jun., Esq., Storeton House, Storeton, Cheshire.

The following Donations were laid upon the table:—

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, vol. XI, (second series), 1854.

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* See Gentleman's Magazine for January, 1856.
† Transactions, p. 181.

From the Society. Sixteenth Annual Report of the Royal Botanical Society, 1855.

From the Mayor of Manchester. Third Annual Report to the Council of the City of Manchester, of the working of the Manchester Free Library.

From Thomas T. Wilkinson, F.R.A.S. The British Oracle; being dissertations on Philosophy and Mathematics, volume I, 1769. The Lady's and Gentleman's Diary for 1855.

From John Rooke, Esq., of Akehead, Wigton, Cumberland. Geology of the Lake District. Tables of Proportional Results of Variable sums of Bank Notes on the relative Price of Wheat.

Mr. Sansom exhibited a specimen of *Sphæria Robertsi* (Hook), a plant-shaped parasite of the caterpillar. Also *Hepialus Virescens* (Doubleday), a New Zealand moth.

Mr. Sansom also exhibited several Diagrams illustrative of his Paper.

Dr. Hume laid before the meeting a selection of thirty-two Medallions and Seals, from a large collection in the possession of Mr. James Coey. The collection, consisting of more than 500 in all, illustrates the Roman Emperors, the reign of Napoleon I, the Kings of France, the Kings and Queens of England, ancient Philosophers, and allegorical subjects.

Mr. Jacob exhibited a large Yataghan, the scabbard being silver, and the hilt ivory inlaid with silver. The blade was of pure Damascus work.

The following Papers were then read:—

On a Fungoid Disease affecting the Pear Tree. *By Thomas Sansom, Esq.**

General Remarks on the Natural History of the Shores of the Mersey. *By Richard A. Tudor, Esq.*

The author entered into the general appearance of the marine zoology of the neighbourhood, giving notices of the habits of many of the species. The following are extracts:—

"A small cone-shaped tube is found in great abundance on the sands near to the last tide-mark, formed in the most symmetric and architectural manner by grains of sand. These are agglutinated together by a secretion from the animal's own body. The inhabitant is a worm, (*Pectinaria Belgica.*) In the living state, it is buried in the sand; we find only the empty tube. There are other tubes frequently met with, about eight or ten inches, with a fimbriated extremity, and covered with fragments of shell, and particles of sand agglutinated by a viscid secretion from the animal's body. This is also the habitation of a marine worm (*Terebella conchilega*), but it is generally buried in the sand, out of harm's way, sometimes penetrating to a great depth. These animals are commonly found midway between the tide-marks.

"Suddenly, in the direction of low water, may be observed something in appearance like a puff of black smoke, which, if watched, will be as instantly changed into a white sheet, and again altered, for a moment, so as to be quite unnoticeable. These appearances and changes are produced by a large flock of marine birds, called Purre (*Tringa Cinclus*); and the change in appearance is caused by either the back or breast feathers presenting themselves to the sun's light. This is effected in a wonderful manner by a simultaneous movement of the whole flock. Occasionally also may be seen the hooded crow (*Corvus cornix*), but only in the winter months. Not more than two or three at a time, rarely more, may be seen, and sometimes a solitary bird. They are migratory, and generally arrive with the woodcock.

"During the summer months the attention of the visitor is directed to a peculiar ocular deception, produced by the refractive condition of the atmosphere. When the tide is out, he observes, looking north, a mile or two distant, a very interesting panorama; the objects being much confused, and appearing as if in a glassy lake,

* Transactions, p. 193.

when in fact they are on dry ground. This deception is produced by the heat of the sun, exhausting the moisture from the sands, and forming quite a mirage. This frequently takes place in the sandy deserts of Arabia, deceiving the traveller when parched with thirst.

"In many patches, nearer to high water mark, on the shore, may be observed millions of worm casts. These are produced by the lob or lug-worm A few inches from the cast may invariably be seen a round hole, through which the animal came and fed while the tide covered the surface; and the cast is deposited after the nutritious portions have been extracted. These creatures are very much sought for by fishermen, and when first taken, they display the prismatic colours very beautifully by their movements. The rings of the head of this animal are very peculiarly constructed, forming a regular cone, which it has the power of drawing in and extending as circumstances require. In these localities the ripple marks, formed by the recent action of the water, present very beautiful appearances, and the shade produced by the varying altitude of the sun cannot but attract the attention of the observer. They partake of great similarity in shape and character.

"On the sands at Little Brighton is found, in abundance, one of the beautiful tribe of beetles, (the *Cicindela hybrida*,) at all times welcome to the collector.

"On the surface of the loose sands, appearing as a dark powder, will be found *Iserine*, a semi-metallic substance. It is also found on the Cheshire side of the Mersey, and is highly magnetic. The lens being at hand, it is interesting to examine a few pinches of the dry sand, by transmitted light, on a little window glass."

3rd January, 1856. ARCHÆOLOGICAL SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following gentlemen were duly elected Members of the Society:—

Thomas Bouch, Esq., 1, Oldhall Street.
Thomas A. Welton, F.S.S., 147, Fenchurch Street, London.
The Rev. Thomas Staniforth, Storrs, Windermere.

The following Donations were laid upon the table:—

From the Society. Report presented to the Cambridge Antiquarian Society, at its 15th General Meeting, May 14th, 1855.

From the Society. Proceedings and Transactions of the Kilkenny Archæological Society, for May July and September, 1855.

From the Rev. J. S. Howson, M.A. First Annual Report of the Government School of Art, in connexion with the Collegiate Institution, Liverpool, 1856.

From the Society. Proceedings of the Numismatic Society, Session 1853-54.

From the Archæological Institute. The Archæological Journal for Sept., 1855.

From the Society. Annual Report, and Selection of Papers read before the Literary and Philosophical Society of Leicester since its formation, 1855.

From la Société Archæologique de l' Orleanais. Etude sur la Roman de la Rose par M. P. Huot, et Rapport par M. Mange du Bois des Entes, 1853.

From the Author. Rapport sur les Fouilles pratiquées en Village de Vieux, pendant les annees 1852, '53, '54, par M. A. Charma.

From C. R. Smith, Esq. Discours prononcé a la Seance publique, du 29 Aout 1852; par M. J. Garnier, Directeur.

From Lord Londesborough. Miscellanea Graphica, No. 7.

From Henry Johnson, Esq. An Act of Parliament *temp.* George II. (1754), for making navigable the river called Sankey Brook, and for adjusting the measure of coal brought down the said Brook, and sold within the town of Liverpool.

From the Rev. T. B. Ingham. A Sacred Poem, by W. Colton, Esq., B.A.

Dr. Hume exhibited three ancient parchments, relating to families and property in Cheshire and Flintshire. They formed part of a collection of similar documents, 59 in number, in his possession.

Mr. Mayer exhibited a gold torque and seven armillae recently found in Ireland. They were all of solid gold, and nearly pure. They were part of a "find," the value of which in gold only, was estimated at £1,200.

The Rev. W. B. Grenside exhibited a silver spoon and four coins, recently found near Thurland Castle, Lancashire; together with numerous gold and silver coins of the periods of the Edwards and Henries. Mr. Grenside also exhibited several rare and interesting medals in silver and bronze.

The first portion of the following Paper was then read:—

On the State of the Western portion of the Ancient Kingdom of Northumberland, down to the period of the Norman Conquest. *By John Hodgson Hinde, Esq.**

10*th January*, 1856. LITERARY SECTION.

J. T. Danson, Esq., V.P., in the Chair.

The following Donations were laid upon the table:—

From the Royal Asiatic Society. Journal of the Society, vol. xi. part 1, 1849; vol. xii. pts. 1 and 2, 1849, '50; vol. xiii. pts. 1 and 2, 1851, '52; vol. xiv. pt. 1, 1851; vol. xv. pts. 1 and 2, 1853, '55; vol. xvi. pt. 1, 1856.

A descriptive catalogue of the Historical MSS. in the Arabic and Persian languages, in the Library of the Royal Asiatic Society; compiled by W. H. Morley, M.R.A.S., 1854.

Essay on the Architecture of the Hindus, by Rám Ráz, native judge in India, 4to., with 48 plates, 1834.

Vestiges of Assyria, being three large coloured maps, exhibiting (1) the Remains of Ancient Nineveh, and the site of the modern Mosul; (2) Plans of Nimroud and Selamiyeh; (3) the country included in the angle formed by the rivers Tigris and Upper Zab.

From J. T. Danson, Esq. Five Letters on Tenant Farming.

From George F. Wilson, F.R.S. New Process for obtaining Glycerine.

Mr. Mayer exhibited on behalf of Dr. Bell, of London, an early edition of Reynard the Fox, copiously illustrated with quaint woodcuts, and printed in the Low German dialect, in 1660.

Mr. Sansom laid before the meeting a series of 28 photographs, the property of J. P. G. Smith, Esq. They represented various edifices, and views in the interior of Sebastopol. The most remarkable were a large view of the Church of St. Peter and St. Paul, the interior of the Malakhoff and Redan, the Docks, Barracks, &c. The whole were executed by Robertson of Constantinople.

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* Transactions, p. 1.

Mr. Jacob exhibited at the same time, the helmet and sword of a Russian soldier killed in the attack upon the Redan.

Mr. Marsh exhibited a stone celt or "toki" found among the Maöris of New Zealand.

Mr. Blackmore exhibited a medal, and made some inquiry respecting it, which had been sent by Mr. Lingard, of Eastham. It* was struck in 1689, on the flight of James II.

Mr. Percy M. Dove exhibited two MS. volumes of autograph letters, and copies of others, from distinguished persons, written during the last 70 or 80 years. Among them were several original letters from Dr. Franklin, Bloomfield, Rogers, Miss Edgeworth, &c.

In connexion with this subject, Mr. Bloxam exhibited a copy of "Cicero de Senectute," printed and published at Philadelphia, in 1754, by Benjamin Franklin.

The following Paper was then read:—

On Some Unpublished Letters of Dr. Franklin. *By Percy M. Dove, F.S.S., F.I.B.A.*

Mr. Dove laid before the Society two large volumes of Autograph Letters and Scraps, which had been the property of the late Benjamin Vaughan, Esq. They contained several original letters from Dr. Franklin, all of them illustrating the published biography of that eminent man, and confirming the high opinion which the public have already formed of him. They did not of themselves, however, contain matter of sufficient general interest, to require their publication.

The dates of the principal letters were October 4th, 1774; December 16th, 1774; May 5th, 1779; August 18th, 1788; and December 9th, 1788.

In connection with this subject, Mr. Dove furnished some information respecting the Vaughan family, with whom this literary correspondence had taken place. Benjamin, eminent as a scholar and philanthropist, was specially the friend of Franklin; and Priestley dedicated to him the first edition of his "Lectures on History." Some letters of his in the life of Bentham, gave rise to an inquiry respecting him from Miss Edgeworth, contained in the present collection. He was in Parliament for some time; and in the negociations for peace between Great Britain and the United States, he was trusted by both parties. He afterwards settled in America; and we are indebted to him for the admirable Autobiography of Franklin. This is acknowledged in the Life† itself; and is confirmed by the last of these letters of 9th December, 1788. Mr. Vaughan's publication of Franklin's "Political, Miscellaneous, and Philosophical Essays," in 1779, gave rise to a singular charge against Dr. Franklin, respecting the Parable on Persecution.‡ William Vaughan was a merchant in London, and the founder of the "London Provident Institution." He had turned his attention greatly to the subject of canals and docks, and is said to have written articles on those subjects for Rees's Encyclopædia. He was intimately connected with literature and science during the greater part of his life. He settled finally in Philadelphia, where he died. Another brother, the Hon. Samuel Vaughan, was Assistant Judge and Member of Assembly in Jamaica. All the members of the family were long lived, in accordance with the theory that the vitality is expended in some families from generation to generation at an early age, say 50 to 60, while in others the members are equally hale at from 80 to 90.

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* *Obverse.* The head of James with the inscription "Jacobus II. Britan. Rex. Fugitiv. *Reverse* An oak tree prostrated by the storm, and beside it an orange tree in full bearing. Around "Pro glandibus aurea poma," and below "Post fugam regis delata regni administratio Principi aureazian. 1689. S.N." See Pictorial History of England, vol. iv. p. 29, where the inscription is incorrectly given.

† "I am diligently employed in writing the History of my Life, to the doing of which the persuasions contained in your letter of January 31st, 1783, have not a little contributed."—*Franklin to Vaughan, October 24th*, 1788.

‡ This "is one of the most curious topics in literary history. It has often been made the foundation of a charge of plagiarism against Dr. Franklin, but as I think, without foundation. In its modern form, it was published by Lord Kaimes in 1774. He says 'it was communicated to me by Dr. Franklin, of Philadelphia,' but he does not say that Dr. Franklin claimed the authorship of it. It was, not long after, inserted in a small collection of Dr. Franklin's miscellaneous writings, published by Mr. B. Vaughan, (a gentleman recollected by Lord Lansdowne), in London. Mr. Vaughan took it from Lord Kaimes's work."—*Life of the Rev. Sydney Smith.*

17*th January*, 1856. SCIENTIFIC SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following Donations were laid upon the table:—

From the Geological Society (London). The Quarterly Journal of the Geological Society, vol. xi, 1855.

From the Geological Society (Dublin). Journal of the Society; vol. i, parts 2, 3, and 4 (1834–38); vol. iii (1844–48); vol. iv (1849-51); vol. v, (1851–53); vol. vi, parts 1 and 2 (1854–55).

From the Society. Proceedings of the Royal Society, vol. vii., No. 16.

From the Society. Proceedings of the Essex Archæological Society, vol. i. part 1.

From Mr. Heath. Explication des ouvrages de Peinture, Sculpture, &c., &c., des Artistes vivants, Estrangers et Français, au Palais des Beaux Arts. Paris, 1855.

An Essay on the Credibility of the Existence of the Kraken, Sea-serpent, and other Sea Monsters. By Edward Heath, Esq.

Dr. Hume laid on the table two objects relating to the Bridgewater family. (1) A medal, now rare, commemorative of Francis Henry, the last Earl of Bridgewater, whose name is associated with the Bridgewater Treatises. (2) A halfpenny of the date 1793, the obverse bearing the arms of the Duke of Bridgewater, and the motto—"Success to Navigation," alluding to the Bridgewater Canal; the reverse—the figure of a man carrying a burden, with the legend "Manchester Halfpenny."

Dr. Hume also directed attention to two interesting fragments of stone; the first a piece of sandstone, about three inches long, from near Delhi, which was perceptibly elastic to the touch; and the second, a sort of soapstone from North Wales, which the women of the locality are in the habit of eating in considerable quantities.

The second portion of the following paper was then read:—

On the State of the Western Portion of the Ancient Kingdom of Northumberland down to the period of the Norman Conquest. *By John Hodgson Hinde, Esq.*

7*th February*, 1856. ARCHÆOLOGICAL SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following Donations were laid upon the table:—

From la Societe Archæologique de l'Orleanais. Memoires, tome iii. 1855.

Bulletin de la Société, Nos. 1-15, (1851-53); Nos. 16-21, (1854-55.)

From J. F. Marsh, Esq. Two plates for the illustration of his own paper.

It was also announced that a donation of four antique high-backed oak chairs, and a small oak table, had been made to the Society, for its Library, by Mr. T. J. Paris.

Mr. Danson exhibited a tobacco-box of tortoise shell, handsomely mounted with silver, and bearing the crest and initials of its original owner; as a specimen of the description of box commonly carried by gentlemen about the middle of the last century.

Mr. Grazebrook drew attention to the prospectus of a Roll of Cloyne of the 13th and 14th centuries, about to be published in fac-simile with illustrations.

Mr. Jacob laid upon the table the following, procured by our army in the East. A book of prayers in Greek, for the use of the modern Greek Church, during the month of April; Venice, 1818. A similar book for the month of September; no date. History and description of the City of Jerusalem and of the Holy Places, folio; Venice, 1728. A Russian square medallion, used as a religious charm, and worn on the person, subject the Virgin and Child.

Mr. G. R. Berry placed before the Society a volume of antiquarian gleanings in the north of England.

Dr. Thom drew attention to the subjects noticed in the following three volumes. A large declaration concerning the late tumults in Scotland, from their first originall; by the King. London, 1639. Recueil des Antiquités, Egyptiennes, Etrusques, Grecques et Romaines; Paris, 1752. A volume containing nine pamphlets, six of them of great local interest in Liverpool.

Mr. Marsh, in illustration of his paper for the evening, exhibited two drawings, viz., a view of the Grammar School, a shield of arms, &c; and a view of the master's house.

Mr. H. A. Bright exhibited an ancient and curious Sclavonic Prayer Book, taken at Kertch.

Mr. Bright exhibited a small green stone or perforated bead, with a white spiral snake curling round it. "The Welsh call these stones 'Glain Neidr,' or snake stones. They were worn by the different orders of bards, each having its appropriate colour; the blue belonging to the presiding bards, the white to the Druids, and the green to the Ovates. Those with the three colours blended were devoted to the use of the disciples. The notion of their rare virtues was universal in all places where the bardic religion was taught."

Mr. Bright drew attention to an autograph of the Empress Maria Theresa, written shortly before her death.

Dr. Hume placed before the meeting on the part of the Misses Cort, of Kirkby-in-Walton, four beautiful ivory carvings. The subjects were described as St. Dominic; the scourging of Christ; Hercules and Omphale; and St. Sebastian.

The following Paper was then read:—

On the Foundation and History of Boteler's Free Grammar School, at Warrington. *By John F. Marsh, Esq.**

14*th February*, 1856. LITERARY SECTION.

J. T. Danson, Esq., V. P., in the Chair.

The following Donations were laid upon the table:—

From the Smithsonian Institution of the United States. Antiquities of Wisconsin, as surveyed and described by J. A. Lapham, C.E., for the American Antiquarian Society; 4to, Washington, 1855.

Eighth Annual Report of the Boards of Regents of the Smithsonian Institution; 8vo, 1855.

Ninth Annual Report of Ditto, 1855.

Appendix; Publications of Learned Societies and Periodicals in the Library of the Smithsonian Institution; part 1, to January 1st, 1855.

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* Transactions, p. 51.

From the Editor. A Few Answers to the Arguments put forward by the Speakers at the Great Meeting in St. George's Hall, January 20, 1856, in Defence of the Sabbath: extracted from the Liverpool Press. Liverpool and London. 8vo. 2 copies.

From Mr. Genn, presented through Mr. Burke. The Humourist; a Comedy, by Thomas Shadwell: London, 1671. Dedicated to the Duchess of Newcastle, and bearing the autograph of Henry Duke of Newcastle, 1676.

Dr. Hume drew the attention of the Society to some beautiful maps, which are in course of publication. They are accompanied by pictorial and ethnological illustrations; and the political dependencies are beautifully grouped, when possible, round their respective centres.

The following paper was then read, viz:—

"On the Area and Population of the Manchester District." *By J. T. Danson, Esq., V. P.**

21*st February*, 1856. SCIENTIFIC SECTION.

The Rev. Dr. Thom, V. P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Transactions of the Ashmolean Society, vol. i (wanting parts 1 and 8, which are out of print); vol. ii.

From the British Association for the Advancement of Science. Twenty-fourth Annual Report—Liverpool Meeting. 1855.

From Mr. Thomas Gray. Statistics of South Australia, for 1854, compiled from authentic official records in the Colonial Secretary's office, Adelaide.

Mr. Sansom mentioned that the arrangement of the Society's Herbarium was progressing, and submitted for exhibition a series of the rarer plants possessed by the Society.

Mr. C. S. Gregson exhibited four cases of British Lepidoptera, in illustration of his paper for the evening.

Mr. Moore, of the Derby Museum, laid before the Society three pairs of horns, of the Chiru, (Antilope (Pantholops,) Hodgsonii, Abel,) the so-called "Unicorn" of Thibet; also a pair of horns of the Prong Horn Antelope, of North America; and another pair, presenting some remarkable points of difference. These were described shortly before, by Dr. Gray, of the British Museum, as those of the Antelocapra Anteflexa, from this specimen, the only one yet obtained.

Mr. Moore read the following remarks, explanatory of these specimens:

On a supposed new species of Prong-horned Antelope from North America. *By Mr. Thomas J. Moore, of the Derby Museum.*

The series of Mammalia in the Derby Museum, contains the head and horns of the remarkable Cabrit or Prong-horn Antelope of North America, and also a pair of horns similar in general character, but bent in an exactly opposite direction. I placed them in the hands of Dr. Gray of the British Museum; and after due consideration, they

* Transactions, p. 165.

were described by him before the Zoological Society of London, as a probable new species, under the name of *Antilocapra anteflexa*. As Dr. Gray's description is attached to the specimen now exhibited, it is unnecessary to repeat it here. I am in possession of no other information respecting it except a fact which I learned after placing the horns in Dr. Gray's hands, and that is, that both pairs of horns were obtained by Mr. Burke in North-West America, but in what exact locality was not stated. The common species ranges from 53° North to the plains of Mexico and California, and is found in considerable numbers on the banks of the Colombia and Saskatchewan rivers.

On the Horns of the Chiru, (*Antilope* (*Panthalops*) *Hodgsonii*, Abel), the so-called Unicorn of Thibet. *By Mr. Thomas J. Moore.*

The reader of Huc's Travels in Tartary and Thibet is not a little astonished at the author's assertion, towards the close of his narrative, in recounting his return from Lha-Ssa, the capital of Thibet, of the veritable existence of the Unicorn. He says, "On the fourth day of our departure from Ghiamda, after having crossed a great lake on the ice, we stopped at the Station Atdza, a small village, the inhabitants of which cultivate a few acres of land, in a little valley encircled by mountains, the tops of which are covered with hollies and pines. The Chinese itinerary says, on the subject of the lake you see before your arrival at Atdza, 'The unicorn, a very curious animal, is found in the vicinity of this lake.'" M. Huc then goes on to say, "The unicorn, which has long been regarded as a fabulous creature, really exists in Thibet. You find it frequently represented in the sculptures and paintings of the Buddhic temples. Even in China you often see it in the landscapes that ornament the inns of the northern provinces. The inhabitants of Atdza spoke of it without attaching to it any greater importance than to the other species of Antelopes which abound in their mountains. We have not been fortunate enough to see the unicorn during our travels in Upper Asia. But all we were there told about it, serves to confirm the curious details which M. Klaproth has published on this subject in the new '*Journal Asiatique*,' and who states 'The unicorn of Thibet is called in the language of this country, *Serou*.'" After some further desultory remarks, M. Huc goes on to say "Mr. Hodgson, an English resident in Nepaul, has at length achieved the possession of a unicorn, and has put beyond doubt the question relative to the existence of this species of antelope, called '*tchirou*,' in Southern Thibet, which borders on Nepaul. It is the same word with *serou*, only pronounced differently, according to the varying dialects of the North and of the South." Dr. Abel has proposed to give to the tchirou the systematic name of *Antilope Hodgsonii*, after the name of the learned person who has placed its existence beyond a doubt.* Unfortunately M. Huc does not inform his readers that the antelope in question is possessed of a pair of horns like other antelopes, and that the so-called unicorns are at the most only such as have broken one off at the root by fighting!

Dr. William Hooker, in his "Himalayan Journals," vol. ii, pp. 157–8, gives a sketch of the head and horns in profile, and also a front view of the Chiru, and states that "The accompanying figures of the heads of the Chiru (*Antilope Hodgsonii*) were sketched by Lieut. Maxwell (of the Bengal Artillery) from a pair brought to Dorjiling; it is the so-called unicorn of Thibet, and of MM. Huc and Gabet's narrative,"—a name which the Doctor thinks the profile no doubt suggested. Dr. Hooker saw them feeding on the short grass about the Cholamoo Lakes, which are 17,000 feet above the sea, in company with another antelope (the *Procapra picticauda*), Hares, (*Lepus oiostolus*), Marmots, and tail-less Hares (*Lagomys*).

The only specimens of this animal which have reached England, are a male in the British Museum, a specimen in the East India Company's Museum, and a male and female formerly in that of the Zoological Society. These, and a few horns in the same museums, are the only remains of this rare species that have been imported, and have been chiefly obtained by B. H. Hodgson, Esq., the late British Resident at the Court of Nepaul, (mentioned above), to whose zeal is due most of the information obtained on the subject, and to whom zoologists are almost entirely indebted for their knowledge of the natural history of that country, and the discovery of some hundreds of new species of quadrupeds and birds.

* From the Illustrated Edition of Huc's Travels in Tartary, &c., translated by Wm. Hazlitt, forming part of the National Illustrated Library, London, 185-. Vol. 2, pp. 244-248.

Such being the rarity of the Chiru, it is with great pleasure that I am enabled to exhibit to the meeting three pairs of horns, two of which were purchased, and one pair, with the chief part of the cranium attached, presented by the East India Company in their recent magnificent donation to the Free Public Museum. This pair was forwarded to the Company by Mr. Hodgson himself; and the following extracts are from various Papers forwarded by him from time to time to the Zoological Society as he became acquainted with the characters and habits of the species, and printed in the Society's Proceedings.

This animal, the supposed unicorn of the Bhotians, was first described imperfectly by Dr. Abel (in the Edinburgh Journal of Science for 1827) from an injured skin, and the notes of Mr. Hodgson. Dr. Abel gave it the name of Antilope Hodgsonii; and it has subsequently been mentioned by M. Lesson as the *Antilope Chiru*, and by Major Hamilton Smith as the *Antilope Kemas*.

"In form the Chiru antelope approaches the deer. Its limbs are long and slender, but not weak; its neck is also rather elongated and slender; its head tapers forwards, but is somewhat deficient in elegance on account of the nasal tufts, and of a rather unusual quantity of hair and bristles about the mouth and nose. The ears and tail are moderate, and devoid of any peculiarity; so likewise are the suborbital sinuses. The horns are exceedingly long, measuring in some individuals nearly two feet and a half. They are placed very forward on the head, and may be popularly said to be erect and straight, although properly speaking they bend forwards and outwards, and become suddenly incurved towards their tips. These latter are rather acute, and the horns near them become round; below they are laterally compressed, and are marked by a series of from fifteen to twenty rings, extending from the base to within six inches of the tip. On the lateral and dorsal surfaces of the horn these rings are little elevated, and present a wavy rather than a ridged appearance; but on the frontal surface, they exhibit a succession of heavy, large ridges, with furrows between.

"Close to the outer margin of either nostril is a soft, fleshy, or rather skinny tumour or tuft, about the size and shape of the half of a domestic fowl's egg. These tufts appear to be peculiar to the *Chiru*.

"In its double covering, the *Chiru* agrees with all the hairy animals of Thibet, where not merely the goats and sheep, but the dogs, horses, and kine, possess an under fleece of soft fine wool. The hair forming the external coat is about two inches long, and so closely set as to present to the touch an impression of solidity; it is straight, nearly erect, rather harsh, and feeble, being for the most part hollow like a quill. Grey blue is the general colour of the hair throughout nine-tenths of its extent from root to tip, as well as exclusively so of the wool beneath the hair. This radical and prevalent color is, however, but dimly seen through the external or superficial hues with which it is overlaid; hues which on the upper parts of the animal are fawn red, and on its under surface and the inside of its limbs are white. The shoulders are faintly marked by a tracing of color lighter than that of the surrounding parts. Down the front of all the legs runs a black line, reaching to the hoofs on the fore-legs, but to the knees only on the hind legs. The forehead is perfectly black, and a fringe of the same hue proceeding from the bottom of the frontal skin passes round the outsides of the nasal tufts. These tufts, as well as the rim surrounding them, are black; as are also the bristles of the mouth and lips; the few hairs, however, which depend from the lower lip are white.

"Entire length of a fully grown young male 4 feet 2½ inches—height at shoulder 2 feet 8 inches.

"The Chiru is highly gregarious, being usually found in herds of several scores and even hundreds. It is extremely wild, and unapproachable by man, to avoid whom it relies chiefly on its wariness and speed; but though shy it is not timid, for if overtaken it meets danger with a gallant bearing. An individual which was kept alive at the Presidency, though captured very young, was perfectly fearless, and could only be approached with caution. It is said by some to inhabit the plains of Thibet generally; while according to others it is confined to those plains which are within sight of mountains, especially of the Hemâchal mountains. It cannot bear even the moderate heats of the valley of Nepal, an individual belonging to the Lama of Digurchee having

died at the commencement of the hot season, when the maximum of temperature was only 80°, a temperature seldom reached for two hours a day, or for two days of that month, March.

"The Chiru is extremely addicted to the use of salt in the summer months, when vast herds are often seen at some of the rock-salt beds which so much abound in Thibet. They are said to advance under the conduct of a leader, and to post sentinels around the beds before they attempt to feed."—*Hodgson in Proc. Zool. Soc. Lond.* 1831, p. 52.

The nasal tumours which form so remarkable a peculiarity of the species, are stated by Mr. Hodgson, in a subsequent paper, "to consist of fine elastic skin and cartilage, similarly to the nostrils, immediately behind the posterior boundary of which they are situated, and into which they open freely, being, in fact, a prolongation backwards, and accessory dilatation of that reflection of the skin which lines the nostrils. Externally they present a round, firm, elastic swelling on each lip, well defined, and covered with hair like the adjoining parts; internally they constitute a sac, of capacity to contain a marble, lined with the same skin that lines the nostrils, and not communicating with the interior of the nose except by and through the ordinary nostrils, into which the sacs open forwards by a slit that will admit the finger to be passed into it; and thence all over the interior of the sac. These sacs are usually defiled with *mucus*, secreted from the nose; and they seem to be nothing more than supplementary nostrils, designed to assist this exceedingly fleet animal in breathing when he is exerting all his speed, for the expansion of the nostrils opens them also, and their elasticity allows of their being dilated in the manner of the nostrils. There is no appearance, either external or on the bones of the face, of the lachrymal sinuses." *Id.* 1833. p. 110.

"The female is hornless, and has two teats only; she has no marks on the face or limbs, and is rather smaller than the male. The male has a large pouch at each groin, as in the Dorcas Gazelle; that of the female is considerably smaller." In conclusion, Mr. Hodgson's opinion as to the position of the species in the system is, that "The Chiru with his bluff bristly nose, his intermaxillary pouches, and hollow-cored horns," (the bony core of the horns having a large oval cavity, communicating by one clean canal with the frontal sinuses) "stands in some respects alone," and hence Mr. Hodgson is disposed to suggest, that it should be regarded as representing "a new subgenus, to be termed *Panthalops*, the vulgar old name of the Unicorn.—The habits and manners of the *Chiru*, his medial size, and his elegant vigorous form, ally him most to the *Antilopine* and *Gazelline* groups, and equally to both." (*Id.* 1834, pp. 80-81.) This opinion is shared by Dr. Gray, who, in his last published arrangement of the Ruminantia, (List of Ungulata Furcipeda in British Museum, 1852,) places the Chiru in the same subdivision as the Gazelles; under the amended title of *Panthalops Hodgsonii*.

Colonel Hamilton Smith remarks, "The species might still have remained unnoticed in the elevated wildernesses of Central Asia, if the people of the country had not asserted it to be the Unicorn, and since the specimen is produced, insisted that it is often found with only one horn. No doubt all the" Antelopes of this group "are liable to break one of their horns, when we consider their length, small diameter, and the vigour and courageous disposition of the animals." *Griffith's Cuvier*, 4, p. 198.

The following papers were then read:

On the Lepidopterous Insects of the District Around Liverpool. *By Charles Stuart Greyson, Esq.**

On the Advantages of the Study of Natural History, in our National or People's Schools. *By Charles Stuart Gregson.*

The introduction of Natural History more fully and formally into our National Schools, was strongly advocated; though the writer gladly admitted that the principle

* Transactions, p. 153; continued from Transactions vii, p. 254.

had been already recognised in part; and he noticed several school treatises on the subject. His opinion was that ordinary schoolmasters and pupil teachers might easily be instructed in the principal branches of Natural History, so far as to initiate their pupils, and to enable them to prosecute individual departments with success, when taste and opportunity existed. Besides securing the young against the formation of vicious habits, such studies would add materially to their enjoyments, and might lead to still higher results in pointing them "from Nature up to Nature's God." But in a utilitarian age, it was of great importance to be able to shew that an acquaintance with natural products, animal vegetable and mineral, was useful to the man of business; and this the writer did by reviewing the daily occurrences in some of the ordinary occupations of life.

6th March, 1856. ARCHÆOLOGICAL SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

Mr. Robert Daw, F.B.S.E., Comptroller of the Customs at Liverpool, and Mr. Charles Hardwick, of Preston, were duly elected Members of the Society.

The following Donations were laid upon the table:—

From Gilbert J. French, Esq. Bibliotheca Albinsoniana, a Book Catalogue.

From the Society. Quarterly Journal of the Geological Society, volume xii, part 1.

From the Author. Sigilla Ecclesiæ Hibernicae Illustrata, by Richard Caulfield, B.A., parts 1 and 2.

From the Author. The Provident Institutions of the Working Classes; and Provident Institutions of the Working Classes, their Precarious Financial Condition; two tracts, by Charles Hardwick, Esq.

From the Editors. Two copies of a Paper entitled "Sabbath Defence," containing the Report of a Public Meeting in defence of the Sabbath, held at St. George's Hall, 22nd January, 1856.

From Thomas Moore, Sen., Esq. Report on the present state of the Navigation of the River Mersey, by George Evans, Capt. R.N., Acting Conservator, 1856.

From William Kelly, Esq., Leicester. Three Wood Engravings, representing respectively—Fragment of a Roman Pavement, Roman Milestone imperfect, and Roman Milestone restored.

From Dr. Kendrick. Various cuttings and slips, being cuttings of local Notes and Queries from the *Warrington Guardian*.

From Dr. Thom. Printed Report of a Meeting of the Leicestershire Architectural and Archæological Society, September 18th, 1855.

From Mr. Dunkin, of Dartford. The Archæological Mine and New History of Kent, parts i–xx, also parts xxi, xxii, and Supplement.

From Mr. H. Ecroyd Smith. Roman Tesselated Pavements, Nos. 1, 2, and 3, from the grounds of Andrew Lawson, Esq., of Aldborough, Yorkshire.

Tesselated Pavement discovered in Jury Wall Street, Leicester, in 1830; and another from the same town, discovered in High Cross Street, 1675.

Mr. Blackmore exhibited and explained four stone celts and two bronze spear heads. Of the former, two were found near Galway, one at Backton, in Cumberland, and one in New Zealand. Of the latter, the more perfect specimen was discovered in 1851, in a bog at Leenane, Connemara, about six feet from the surface.

Mr. Blackmore also drew attention to the formation of Irish pearls, and showed two from beside Oughterarde, with the mussel shells in which they were found. He also laid before the meeting two coins, one of Nero, found in cutting the canal from Lough Corrib to Galway Bay; and two echini of unusual size and thickness, from the oyster beds on the coast of the County Clare.

Dr. Kendrick exhibited to the members an autograph letter of Linnæus, which had been addressed to Mrs. Anne Blackburne, of Orford, Warrington. It was dated Upsal, 24th July, 1771. A printed translation of it was read.

Mr. Boult made some inquiries respecting localities on the estuary of the Mersey, and showed the manner in which they were laid down in a Chart which he exhibited. Its title is "A Description of the Sea Coast of England and Wales, from Black-comb in Cumberland, to the Point of Linus in Anglesea, shewing the true situation of all the Headlands, Bays, Roads, Harbours, Rivers, Creeks, Islands, Sands, Shoals, Depths of Water, Settings and Flowings of the Tides, Places where the Buoys, Beacons, &c. are fixed, with proper directions to avoid all dangers, and sail into any Harbour, Bay, Road, &c. on the said coast. Also many prospects of the same, correctly engraven on Copper Plates, in the charts belonging to this work; with remarks on, and references to them in a new and useful manner. According to an actual survey thereof made in the years 1736 and 1737, By Samuel Fearon and John Eyes, Liverpool: Printed by Adam Sadler, for the Authors, 1738."

[On the Chart of Liverpool Bay is a memorandum as follows:—"This new survey was taken and published in December 1755 as the act directs by John Eyes:" and "The plates altered by Jeremiah Evans Liverpool."]

Mr. Stonehouse exhibited water-colour drawings of various points in the neighbourhood, dated 1821; also a coloured engraving representing Liverpool from the Rock Perch in 1797. It was stated that several drawings are in circulation, copied from Herdman and others, but incorrectly represented to be original.

Mr. Lidderdale exhibited some works of the 17th century on Astrology and Palmistry.

Mr. Grazebrook showed a curious padlock made from a cannon ball, supposed to have belonged to the Spanish Armada.

Mr. Boardman exhibited, in illustration of his Paper to be read, a steel tobacco-box of the middle of last century; a set of Prince-of-Wales buttons, manufactured and worn in 1762; an early umbrella, of about 1770; and a peculiar walking stick of the same date.

The Secretary announced, that the next Meeting of the Society would be held in the Grand Jury Room, which would be fitted up specially for the occasion. A Paper by Dr. Julius Oppert, of Paris, would be read; and on that occasion the attendance of ladies was invited.

A letter was read from Sir Philip Grey Egerton, Bart., dated February 18th, 1856, correcting some statements in Mr. Stonehouse's Paper on the Parish and Church of Over, in Cheshire.* The expressions criticised were the following:—

1. *Mr. Stonehouse.*—"Oulton park and demesne were their [the Starkies'] property."

Sir P. Egerton.—"Now Oulton park and demesne are not in the parish of Over, but in the parish of Little Budworth, in which parish, to the best of my belief, the Starkies never possessed a single acre. They belonged to the Dones, who purchased them from the Rechetons, *temp* Edward IV, and came into the possession of my family, by the marriage of Elizabeth, heiress of Hugh Done, with John Egerton, who died 1st Richard III."

2. *Mr. Stonehouse.*—"At Hugh Starkie's death in 1555, the estates [viz., Darley] came into possession of Oliver Starkey, an illegitimate son..... He dying without issue, the estates descended to his brother James."

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* Vol. vii. p. 35*.

Sir P. Egerton.—"No authority is given for this statement. As far as I have been able to ascertain, I do not believe that the estates were vested in Oliver, but that on the death of Hugh Starkie without legitimate issue, they passed to his brother James."

3. *Mr. Stonehouse.*—"Either by litigation, or from other causes, the property passed into the hands of the Egertons."

Sir P. Egerton.—"I am aware that this passage, and many others in the paper, are borrowed from Ormerod; but in so gigantic a labour as the compilation of a History of Cheshire, it cannot be otherwise than that inaccuracies must occur, and they are very frequent in all that relates to my family, in consequence, I believe, of the author not having had access to the documents containing the information he required. The ambiguity of expression in the passage quoted, proves that he knew nothing about the matter; and would, I should have imagined, have deterred any other from selecting such a passage for repetition. The facts are, that the Starkie estates came into the possession of the Egertons of Oulton, by regular sales and conveyance, from Henry Starkie to Sir Philip Egerton, Knt., in the reign of Charles II, as shown by deeds and documents in my possession."

Sir Philip forwarded with his remarks a tracing of a scrap of a Starkie pedigree, written apparently in 1695. It brings the family one generation lower than Ormerod's pedigree.

The following Paper was then read:—

TABLE TALK OF THE OLDEN TIME; OR, LIVERPOOL A HUNDRED YEARS AGO. *By James Boardman, Esq.**

13*th March*, 1856. MISCELLANEOUS MEETING.

J. T. DANSON, F.S.S., V.P., in the Chair.

The Chairman, on announcing that the meeting was constituted, expressed on behalf of the Society, the pleasure which the members felt in welcoming ladies to one of their ordinary meetings. Special arrangements had been made for the purpose, and he hoped that the proceedings would be of a character to produce favourable and useful impressions. The order of business would be followed just as usual, so as to give a perfectly correct impression of the Society's mode of proceeding.

The following Donations were laid upon the table:—

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, second series, vols. II, III, IV, V, VII, (in two parts), VIII.

From Lord Londesborough. Miscellanea Graphica, No. 8.

From the Author. Manual of British Botany, by Charles Cardale Babington, M.A., F.R.S., F.G.S., third edition, 1851.

From the Author. An Account of the Presents received, and Expenses incurred, at the Wedding of Richard Polsted, of Albury, Esquire, and Elizabeth More, eldest daughter of William More, of Loseley, Esquire, in 1557, by John Evans, Esq., F.S.A., 1855. From the Archæologia, vol. XXXVI.

From the Author. Duplicate copy of Geology of the Lake District, by John Rooke, Esq., of Akehead, Wigton, Cumberland.

From the Rev. Dr. Thom. Nos. 10 and 14 of the Rambler, a Liverpool periodical.

Mr. Boardman exhibited a lady's work-box, inside of which was an inscription,

* This paper has already been published, and is sold in pamphlet form.

stating that the cover of it was worked by Dorothy Peake, grand-daughter of the Rev. Charles Herle, Prolocutor of the Westminster Assembly of Divines in 1643. He was Rector of Winwick from 1626 to 1662, when he was ejected for nonconformity.

A large number of illustrations of Assyrian and Babylonian objects were lent by the Rev. Dr. Baylee, of Birkenhead, and formed part of an interesting display on one side of the room.

Dr. Hume called attention to a paragraph in *L'Abbevillois*, a French newspaper of 7th March, 1856, in which Mr. Roach Smith's Museum of Antiquities is noticed. The writer mentions that as it is interesting for the history of France, almost as much as for that of England, its purchase by the French Government would be desirable, or by one of the great towns of the Departments.

The following Paper was then read :—

On Babylon, and on the Discovery of the Cuneiform Characters and the mode of Interpreting them. *By Dr. Julius Oppert, of Paris.**

3rd April, 1856. ARCHÆOLOGICAL SECTION.

Peter Macintyre, M.D., in the Chair.

The following gentlemen were duly elected Members of the Society :—

The Venerable Archdeacon Jones, M.A., Waterloo.
Joseph Hibbert, Esq., Brook Bank, Hyde, Cheshire.

John Pemberton Heywood, Esq., late High Sheriff of Lancashire, having signified his wish to continue in the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following donations were laid upon the table :—

From the Society. Memoires de la Société Archæologique de Normandie, vol. x, part 4, (second series,) 4to, Paris, 1855.

Do., vol. i, (third series,) 4to, Paris, 1855.

From the Society. Transactions of the Ossianic Society, vol. i. The Battle of Gabhra, 1854.

From the Society. Bulletin de la Société Archæologique d'Orleanais, No. 22, 1855.

From the Society. Original Papers published under the direction of the Committee of the Norfolk and Norwich Archæological Society, vol. v, part 1, 1856.

From the Cambrian Archæological Association. Archæologia Cambrensis, No. 5, (third series) January, 1856.

From the Author. The History of Leicester, from the time of the Romans to the end of the 17th century. By James Thompson, Leicester, 1849.

From Edward Heath, Esq. Local pamphlets, containing the following :—

Annual Reports of the Liverpool Ragged School Union, 1st, 2nd, 3rd, 4th, 6th, and 8th.
Annual Reports of the Liverpool Industrial Ragged Schools, Soho Street, 1st, 3rd, 4th, 5th, 6th, and 7th.
Report of the Police Establishment, &c., 1854.
Financial Reform Tracts, (new series,) vii, viii, ix, xi, xiii, (1854, '55, '56.)
Liverpool and its Educational wants, by James Gillespie.

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* Transactions, p. 93.

Report of the Liverpool Borough Prison, 1852.
Report of the Proceedings at a Special Meeting of the Liverpool Chamber of Commerce, on the Law of Partnership, 1854.
Ritchie's Address on Ragged Schools, to Young Men's Society, 1851.
History of the origin of Ragged Schools, 1848.

From Thos. B. Ryder, Esq. Journal of the Manchester and Liverpool Agricultural Society, 1856.

From the Rev. W. B. Grenside, B.A. Two drawings of the Market House, Town Hall, Stone Stocks, and base of the parish Cross, Hornby, Lancashire, made previous to their removal in 1851.

From Mr. Hermann. Two Lectures, by the Rev. Mr. Hart, on the History and Antiquities of Nantwich.

From Dr. Hume. Proof impression of a Portrait of Mr. Mayer, Honorary Curator, engraved by LeKeux, from a photograph.

From Charles Hardwick, Esq. Observations on the rate of Mortality and Sickness existing among Friendly Societies; by Henry Ratcliff, 1850. Appendix to do., 1852.

From Alfred J. Dunkin, Esq. Archæological Mine and History of Kent, Parts xxv, xxvi, xxvii.

From Dr. Kendrick. Two slips of Notes and Queries, from the *Warrington Guardian*.

From Alderman Brown, Preston. Portion of the upper stone of a Quern, obtained among the Roman Remains at Walton-le-Dale, Preston. Two fragments of Samian Ware, and neck of an amphora, from do.

From Charles Hardwick, Esq. Roman Remains, from Walton-le-Dale, consisting of the following:—

Portion of the neck, handle, and sides of a large Roman amphora.
Portion of a flat tile, with flange.
Four balls of prepared clay, as used at the potteries.
Nine pieces of red Samian ware.
Seven pieces of dark ornamented pottery.
Three do. of white do., one of them the bottom of a mortarium, with quartz inserted to aid the friction.
Neck and three fragments of an ordinary red vessel.
Two molar teeth, and part of the jaw of a horse, found in connexion with the remains.
Two large iron nails, portion of a pewter vessel, and a piece of sheet lead.

In illustration of his paper, to be read, Mr. Hardwick exhibited a large number of objects, including the following:—Enlarged map of the locality, including the township of Fishwick, and part of the parish of Walton; three drawings from the more interesting figures exhibited on the Samian ware; drawing of Roman pottery of various kinds; drawings of numerous objects of interest in stone and metal; portions of a Roman quern; fragments of Roman pottery; Roman coins, various; part of a fibula, with ornaments in blue enamel; portion of a fine fibula, with red stone setting; &c., &c., as described in the paper.

The Rev. W. B. Grenside, B.A., exhibited a beautiful sword, dug up in Sherwood Forest, about 75 years ago, and formerly the property of Major Hayman Rooke. The hilt presented a specimen of elegant ivory carving.

Mr. Grenside also exhibited a portion of a silver fibula, with curious inscription on both sides. It was dug up at the Roman Station of Bremetonacæ, about three miles from Kirkby Lonsdale.

The Secretary announced that the Honorary Curator, Mr. Mayer, had offered to place

his valuable collection, illustrative of Archæology, Ethnology, and the Fine Arts, in the keeping of the Town Council, during pleasure; provided the Library and Museum Committee could find suitable accommodation for it.

The following Papers were then read:—

On the Roman Remains recently discovered at Walton-le-Dale, near Preston. *By Charles Hardwick, Esq.* *

Monumental Brasses found at Preston. *By William Dobson, Esq.*

A few months ago, as a brass-founder (Mr. W. Holland) in Preston was turning over a heap of old brass, with a view of transferring it to the melting pot, one piece having an antiquated look, and bearing upon it some marks, attracted his attention. He rescued it from its impending fate, and laid it aside. I obtained it from him, and after a little cleaning, easily deciphered the following inscription in plain Roman capitals, of which a rubbing is submitted:—

HERE · LYETH · INTERD · SEATH · BVSHELL · WOOLLEN · DRAPER BAYLIFE · AND · A · BROTHER · OF · PRESTON · DYING . THE · XV · OF SEPR · 1623 · AGED · 53 · GAVE · VNTO · HIS · KINESFOOLKES · AND · GOD CHILDREN · IN · LEGACIES · VI · C · L† · ALSO · XX · L‡ . TO · THE · POORE OF · THIS · TOWNE · FOR · EVER · THE · VSE‖ · TO · BE · GIVEN · THE . SAID POORE · BY · THE · MAIOR · OR · HIS · DEPVTIE · AT · CHRISTs · & · EASTER 4 · L · TO · THE · POORE · OF · LEELAND · & · WALTON · AL · OVT · OF · HIS CHARITABLE · MINDE

The "Seath Bushell" whose benevolence is thus recorded, was buried within the Parish Church of Preston, and his interment is recorded in the parish register, next to one dated the 16th of September, 1623, as follows:—Sep. [sepultus, buried] Mr. Seth Bushell, eo: die [the same day.] He was, as stated in the inscription, a "brother of Preston," i.e., a member of the corporation, his signature as "Seathe Bushell" being affixed to some proceedings of that body in the corporation records, in the year 1612. After possessing myself of this plate, which Mr. Holland kindly placed in my hands, with a view to its restoration to the church, I made some enquiries as to the site of Mr. Bushell's grave, and felt anxious to obtain some particulars of one who had shewn such a desire to benefit not only his "kinesfoolkes," but the poor of his town and neighbourhood. I learned that when the works in connection with the rebuilding of our Parish Church were in progress (in 1854 and 1855), the workmen were told that if they met with any plates (meaning, no doubt, ordinary coffin plates) they were to bury them. Yet even an ancient coffin plate might have possessed some local, personal, or historical interest. It would have been wiser to have ordered that all should have been submitted to some one in authority, who might have examined them. The workman who met with this plate, which was affixed to a gravestone about two feet below the then level of the church floor, knew that if a brass plate was of so little importance to a churchwarden, it would at least be worth something to a marine store dealer; so he got it removed and sold for old brass. In the progress of the work another workman met with a second brass upon the same gravestone, and this being disclosed in the presence of the parish sexton, some trouble was taken to obtain the former plate also, but of course without success. An inscription, "Spes altera vitæ" [*sic*], cut in rude old English characters, was above the plates on the gravestone. When I made enquiries (in December last) a few months after the discovery, not a vestige of the stone could be found. It had been destroyed in the course of the work, but fortunately Mr. John Addison, of this town, who saw it soon after its discovery, had taken a rubbing of it, from which this copy has been made.

The two brasses are of equal size, nineteen inches by nine; the one discovered last was placed lengthwise on the stone, with the other one crosswise below it. The former

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* Transactions, p. 127.
† £600. ‡ £20. ‖ Interest.

bears a rude representation of a person wearing a robe, probably a municipal robe of that era; for our councillors then wore gowns, and rules respecting their attire are in our corporation records. There is also the broad turned down collar seen in portraits of that date. Mr. Bushell, for I deem it to be intended for his effigies, has the close cut hair of the Roundhead of that age, as well as the moustache and "beard of formal cut" clearly defined.

Of his family connections I can give no authentic information. From the extent of his bequests to his "kinesfoolkes and god-children" I presume he was childless. A Seth Bushell, probably his nephew, was vicar of Preston. His signature as "Seth Bushell, D.D., and Vicar of Preston," appears several times in the minute book of the Select Vestry of the Parish, between 1671 and 1674. He was afterwards (1682–84) Vicar of Lancaster. It is not improbable that Dr. William Bushell, the benevolent founder of Goosnargh Hospital, near Preston, was of the same family. As respects the benefactions to the poor, recorded in the inscription, I can give no information. The Reports of the Charity Commissioners say nothing about any of them, and the records of our corporation are silent as to any legacy to this town, although they contain notices of other charities. Like many others they have, in the lapse of ages, been lost sight of, or diverted from their original destination.

Notwithstanding the rudeness of these brasses, as works of art, the scarcity of such monumental records in the northern and western counties, and the benevolent intentions of the Lancashire worthy whom they were intended to commemorate, entitle them, I think, to a notice in the Transactions of the Lancashire and Cheshire Historic Society.

10*th April*, 1856. LITERARY SECTION.

THOMAS SANSOM, Esq., in the Chair.

The following Donations were laid upon the table.

From the Royal Irish Academy. Transactions of the Academy, vol. xxii, part 1, Science; part 2, Literature. Proceedings, vol. vi, part 2 (1854–55.)

From Edward Clibborn, Esq. An Essay on the Probability of Saul, Beniah, Abishai, Jehoshaphat, Jonathan, &c., having been the Hycsos Rulers, called Salatis, Beon, Apachnas, Apophis, &c., accompanied by a biographical and historical table.

From the Society. Transactions of the Philological Society; Nos. 12, 13, and 14, for 1854.

From the Cambrian Archæological Association. Archæologia Cambrensis, No. 6, (third series) April, 1856.

From G. Mansfield Browne, Esq. Twelve coins of the Greek and Roman periods.

From Dr. Macintyre. View of the top of Bold Street, now undergoing alterations, and of St. Luke's Church.

Miss Lamb, of Everton Road, forwarded for exhibition two small Indian figures carved out of soapstone. They had been forwarded by her late brother, Mr. Andrew Lamb. One represents the Hindoo Mars, seated on the back of a peacock; and the other his brother, a corpulent man, with four hands and an elephant's head. Miss Lamb also exhibited a silk purse, used as an envelope by persons of distinction in India. It is sewed inside, and the cord which fastens it at the mouth is enveloped in the seal.

The following paper was then read:—

ON THE CHARACTER OF HAMLET. *By the Rev. Arthur Ramsay, M.A.**

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* Transactions, p. 115.

17*th April*, 1856. SCIENTIFIC SECTION.

J. T. Danson, Esq., V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Journal of the Geological Society, vols. v, vi, vii, viii, ix and x.

From the Society. Transactions of the Philological Society, Nos. 12 and 13 for 1855.

From the Society. Journal of the Statistical Society, vol. viii, part 4, December, 1855.

From the Editor. The Poetical Works of William Drummond, of Hawthornden, edited by W. B. D. D. Turnbull, Esq.; London, 1856.

From John Hartnup, Esq. Report of the Liverpool Observatory, for the year 1855.

From Mr. J. R. Isaac. A wooden platter, with a crowned figure in the centre, supported by two dolphins, and round the border birds and fruit.

A portion of two guns, fixed together, taken by Mr. Isaac from the fire at the Tower of London.

Thomas Wyndham Jones, Esq., of Nantwich, exhibited the following articles:—

The knife and fork of Mrs. Elizabeth Milton, mentioned in the inventory (vol. vii, p. 30*) as "a toter shell knife and fork, with sundry others." They are deposited in an oak case, made from the beam of a cottage in Nantwich, which was the inheritance of Humphrey Milton the elder and Humphrey Milton the younger, and adjoined a Baptist Chapel, in the yard of which Mrs. Milton was interred.

Skull of the Indian wild hog.

Helmet found in a field near Acton Church, Nantwich, the scene of a battle, *temp.* Charles I.

Portion of a chain-shot, found several feet below the surface in Nantwich, during an excavation for sewerage purposes.

A horse shoe, found at the same time and place.

An ancient steel box, which had belonged to a family in Cheshire.

An Oriental hookah stand.

Mr. Jones also exhibited the following ancient documents:—(1) A warrant of Privy Seal, 23 Henry III, for letters patents to make Thomas Griffiths, Welshman, a denizen. (2) Grant from Edward, Prince of Wales, to Rhys ap Griffith of £40 a-year, and also of 40 marks a-year, 48 Henry III, as Governor of Droslyn Castle.* (3) Grant from Edward, Prince of Wales, concerning Thomas Praers de Bertomlegh, (French) 9 Edward II. (4) Agreement by Philip de Somerville † with Edward his heir, on his conveyance of some manors in Staffordshire and Nottinghamshire.

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* The origin of Droselan, otherwise Dryslyn, Castle, in Caernarvonshire, seems to be involved in great obscurity, although it is conjectured to have been built by the Princes of Dynevor for protecting their adjacent possessions against the incursions of their enemies. Its ruins stand in a very bold situation; the view from which, over the beautiful vale of Towy, cannot be surpassed for variety and grandeur of scenery throughout South Wales. That brave English warrior, Nicholas, fourth Baron Stafford, in an expedition in which he was engaged (1287) against Sir Rese ap Griffith, Governor of that Fortress, (under the annexed royal appointment nearly 600 years old), was killed by the walls thereof falling upon him.

† Sir Philip de Somerville, named in the accompanying ancient charter, was descended from Sir Gualter de Somerville, who came over to England with King William the Conqueror, which monarch bestowed on Sir Gualter very large possessions. In the reign of King Edward the Third Sir Philip held of the Earls of Lancaster, Lords of the house of Tutbury in Staffordshire, amongst other estates, the manor of Thicham, in that county, once celebrated for its singular flitch of bacon custom, like to that of Dunmow in Essex, recently revived by the exertions of Mr. Harrison Ainsworth.

The Chairman read an extract from the Report of the Liverpool Observatory, to the effect that the Secretary of the British Association for the Advancement of Science had agreed to allow the use of its tables and plates to one of our local societies, in illustration of the results of the Liverpool Anemometer. Proof impressions were laid on the table.

The following papers were then read:—

On the Means of Testing Marine Meteorological Instruments. *By John Hartnup, Esq., V.P.**

Results Deduced from Observations taken with the Self-Registering Anemometer and Rain-Gauge, at the Liverpool Observatory, During 1852, '53, '54, '55. *By John Hartnup, Esq., V.P.* †

1*st May*, 1856. ARCHÆOLOGICAL SECTION.

The Rev. Dr. Thom, V.P., in the Chair.

The following gentlemen were duly elected members of the Society:—

Rev. H. Parr, M.A., Vicarge, Taunton.
John Billington Booth, Esq., Preston.

The following Donations were laid upon the table:—

From the Society. Transactions of the Ossianic Society, vol. ii. The Festivities of the House of Conan of Clan Sliebh, in the County Clare; Edited by Nicholas O'Kearney, Esq.

From the Society. Journal of the Kilkenny Archæological Society. Nov., 1855; January, 1856.

From the Society. Memoires de la Societié des Antiquaires de l' Ouest; 1854.

From the Society. Bulletin de la Societié Archæologique de l' Orleanais, No. 23.

From the Archæological Institute. Journal of the Institute, No. 48, for December, 1855.

From the Royal Institution. Report of the Royal Institution for 1855.

From the Free Public Library and Museum Committee. Catalogue of the Library, new edition, 1855.

From the Editor. A Catalogue (with the title pages in full, and illustrative extracts) of Books chained to an old case in St. Anne's Church, Turton, and of a similar collection at Gorton, bequeathed by Humphrey Chetham; Edited by Gilbert J. French, Corr. Mem. S. A. Scot. for the Chetham Society.

From Dr. Kendrick. Antiquarian Slips from the local Notes and Queries in the *Warrington Guardian.*

From Alfred Jon. Dunkin, Esq. Archæological Mine, and History of Kent, parts xxviii, xxix, xxx, xxxi.

From J. N. Crosse, Esq. Rubbing from an ancient brass in the Church of St. Mary, Redcliffe, Bristol, exhibiting John Jay, alderman, his wife, six sons and eight daughters, 1480.

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* Transactions, p. 109. † Transactions, p. 212.

From Dr. Thom. Two additional numbers of the Rambler; Liverpool, 1837.

From an unknown donor. A religious notice, in the form of a play-bill, said to have been posted on the Surrey Theatre, by the Rev. Rowland Hill.

The Secretary laid upon the table a volume for which the Society had subscribed. "'Inventorium Sepulchrale,' an Account* of some Antiquities, dug up in the County of Kent, from 1757 to 1773. By the Rev. Bryan Faussett. Edited from the original MSS. in the possession of Joseph Mayer, Esq., by C. Roach Smith, F.S.A., author of '*Collectanea Antiqua*,' 1856."

Dr. Hume exhibited two gutta-percha gilt seals, part of a collection which he had received from John Hopkins, jun., Esq., of Great Grimsby. The one was the common seal of Oswestry, containing a punning allusion to the name of the town; the other was the Episcopal seal of Richard, [Fleming] Canon of Lincoln, and Bishop in 1420.

Mr. McQuie laid upon the table an engraving showing the French Squadron, commanded by M. Thurot, lying at anchor in Ramsey Bay, after their capture by Elliot, 28th February, 1760. Taken from the original painting by Richard Wright, and by him dedicated to the Mayor, Corporation, and Merchants of Liverpool.

Mr. Crosse exhibited a rubbing from a brass in the Church of St. Mary, Redcliffe, Bristol, representing the brother of Sir Thomas Mead, his wife and daughter, 1520.

The Rev. Thomas Moore exhibited a medallion *temp.* Charles I, the property of Mr. Gath.

The following Paper was then read:—

On the Ethnology of South Britain, at the Extinction of the Roman Government in the Island.† *By Thomas Wright, M.A., F.S.A., &c.*

8*th May*, 1856. LITERARY SECTION.

J. T. Danson, Esq., V.P., in the Chair.

William Henderson, Esq., of Church street, was duly elected a member of the Society.

John Chapman, Esq., of Hill End, Mottram in Longdendale, late High Sheriff of Cheshire, having signified his wish to remain connected with the Society, was enrolled without election or entrance fee, in accordance with Law xiii.

The following Donations were laid upon the table:—

From the Society. Journal of the Statistical Society, vol. xix part 1, 1856.

From John Mather, Esq. Notes and Queries,‡ vols. xi and xii, 1855.

From David Lamb, Esq. Athenæum, for 1855, in continuation of former donations.

From the Editor. Pamphlet on National paper money, as a legal tender in payment of debts and taxes, 1856.

Mr. Crosse, F.S.S., exhibited a snuff-box from the keel of the Golden Horse frigate, sunk by Van Tromp, in the Royal Naval Yard Chatham, 1666. It was found while excavating in 1824.

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* This Volume is richly illustrated, with a portrait, map, woodcuts, and numerous plates, coloured and uncoloured.

† Transactions, p. 141.

‡ In volume vii, p. 20* a previous Donation is announced as "five volumes." It should have been *ten* volumes, (i to x) for five years, (1850-54.)

Mr. Crosse also exhibited some Roman Coins of the early Emperors.

In illustration of a portion of Macauley's England, Mr. H. A. Bright exhibited two documents. (1) An Autograph proclamation of General Schomberg, dated Lisburn, 1690, shortly before the Battle of the Boyne; (2) A Treasury warrant of William iii countersigned Stephen Fox; concerning the reimbursement of Robert Lord Lucas as to his expenses, "in sending down ten gentlemen (late prisoners in the Tower,) into Cheshire and Lancashire." These were, George* Lord Viscount Molyneux, Sir Thomas Clifton, Sir William Gerard, Sir Rowland Stanley, Sir Thomas Stanley, Peter Leigh of Lyme, Bartholomew Walmsley and William Dicconson, Esqrs.

Mr. Crosse read an extract from a letter, in allusion to the beautiful church of Fairford in Gloucestershire, the twenty-eight windows of which were fitted with stained glass, procured by John Tame, Esq., in 1498.

The following paper was then read:—

On the Rise and Progress of the Manufacturing Towns of Lancashire and Cheshire.† *By David Buxton, Esq.*

15*th May*, 1856. SCIENTIFIC SECTION.

Rev. Dr. Thom, V.P., in the Chair.

The following Donations were laid upon the table:—

From the Society. Proceedings of the Royal Society, vol. vii (Nos. 17, 18, 19, 20.)

From the Society. Transactions of the Philological Society, Nos. vii, viii, ix, x, xi, 1855.

From the Society. Proceedings of the Ashmolean Society, Oxford, 1855.

From Robert Rawlinson, C.E., F.G.S. Report of the General Board of Health on a Preliminary Inquiry respecting,

Southport, Lancashire, 1855.
Camborne, Cornwall, 1855.
Smethwick, Staffordshire, 1855.
Ulverstone, Lancashire, 1855.

From the Author. Sur l' Etablissement d 'une langue Universelle; Discours Prononcé a la Rentrée Solennelle, des Facultes de l' Academie de Caen. Par M. A. Charma, Professeur de Philosophie, &c., Paris 1856.

From Thomas G. Wedgwood, Esq. A volume entitled "Dr. Sacheverell's Tryall," consisting of five folio tracts, 1710.

From James Stonehouse, Esq. The Borough Fund of the Corporation of Liverpool, in account current with John Wybergh, Treasurer, for the years 1847, '48, '49, '50, '51, '53, '54, '55.

From William Dobson, Esq. Authentic Records of the Guild Merchant of Preston, in the year 1822, with an introduction by J. Wilcockson. Preston 1822.

From the Society. Proceedings of the Royal Geographical Society, Nos. 1 and 2.

From the Society. Journal of the Geological Society of Dublin, vol. vii, parts 1 and 2.

From the Editor. Songs and Carols, from a MS. in the British Museum, of the 15th century. Edited for the Warton Club, by Thomas Wright, M.A., F.S.A., 1856.

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* Caryll [?]
† Transactions, p. 199.

From the Editor. The Farington Papers; edited for the Chetham Society, by Miss ffarington, 1856.

From the Committee of the late Church of England *Institute. Parliamentary Papers, viz.—Reports, 21 vols.; Journals of the Lords, 29 vols.; Journals of the Commons, 101 vols.; Miscellaneous, 13; Total 164 vols.

Mr. Crosse exhibited an ancient black letter Chronicle, containing details of English History from 1108 B.C. to 1578 A.D.; also Sylvanus Morgan on Geometry or Dialling, 1652.

Mr. John Peacock, of Hough Green, Chester, exhibited a large number of Roman and other Antiquities from Chester, some of which had been found so recently as that very day. They embraced the following—

Fibulæ found in Northgate street.
Ditto and Spear Head.
Thuribulum and Spoon.
Silver Coin of Vespasian.
Roman Tile, and part of another Tile, with the letters LEA upon it.
Portion of a Mortarium, with the words MARINUS FECIT.
Roman Stylus (supposed.)
Fibula, from Eastgate street.
Two small Vases.
Antefix, with the letters LEC. XX., and figure apparently of a boar rampant.
Gold Ring, with a Sapphire, from Northgate street.
Coin with inscription "Tetricus" (?)
Irish Farthing of Charles I.
Two Coins of Aurelius.
One supposed Abbey counter.

Mr. Poole exhibited a peculiar breech-loading rifle, self-cleaning, and capable of being fired 400 times in an hour. It is patented by Mr. Bentley.

The Secretary announced that the Excursion of the Society would take place on the 24th of June, to Preston and neighbourhood.

The following papers were then read:—

THE ANCIENT GEOMETRICAL ANALYSIS, ILLUSTRATED FROM THE WRITINGS OF THE LANCASHIRE GEOMETERS.† *By Thos. T. Wilkinson, F.R.A.S.*

ON SOME OF THE RECORDED CHANGES IN THE LIVERPOOL BAY, PREVIOUS TO THE YEAR 1800.‡ *By Joseph Boult, Esq.*

The author, amongst other illustrations, exhibited a chart upon which were laid down the lines of high and low water mark, for the years 1689, 1755, 1813, and 1847; from which it appeared that the coast line from the Rock point to Dove point receded in the first interval, but that the low water line from the Rock point to Leasowe Castle advanced. Westwardly of the Red Noses the advance was considerable; on the other hand westward of the castle and in Hoylake, low water mark has receded. There are remarkable changes also on the north side of the Channels, the Burbo bank of Collins's survey being split up into several patches on Eyes's chart. In place of the shelf or bar stated by Collins to be all dry at low water, and extending from Dove spit to Burbo bank, Eyes gives a channel of from one and a half to seven fathoms deep.

The author then entered upon the subject of the coast at Wallasey Leasowes, and

* By the "Literary and Scientific Institutions Act," (17 and 18 Vic. cap. 112, sec. 30,) it is enacted that when any such society is dissolved, its remaining property shall be handed over to some other society or societies, for the promotion of similar objects.

† Transactions p. 75.

‡ The reading of this paper was omitted, owing to the lateness of the hour. The following is an abstract.

reviewed the evidence in favor of the received opinion that an ancient lighthouse existed there. He entered into the subject in considerable detail, quoting various writers and acts of parliament, and concluded that the so called old lighthouse must have been a shortlived twin brother of the patriarch who still holds his ground at Wallasey Leasowes, having no existence prior to 1761, and probably being defunct and washed away within a few years afterwards.

On the Eastern margin of the Bay considerable changes also had taken place, between the date of Collins's survey and the year 1800. The channel had moved nearly its own breadth, or 1200 yards westward. In the course of his investigations, the writer had stumbled upon traces of a village named Altmouth, situated at the junction of the river Alt and the sea. This village is mentioned by Camden. Mr. Edward Littledale had politely afforded the opportunity of examining the records of the Alt commission in their printed volume. From these it appeared that formerly considerable apprehensions were experienced lest a portion of the locality might be inundated, in consequence of the shifting of the sandhills, which formed a secure barrier. Measures were therefore adopted to prevent the moving of the hills. Mr. Boult conjectured that the village had been deserted in some panic, or had possibly been overwhelmed by some sand drift, as at Nineveh, and so deserted and lost.

Concluding Address. *By J. T. Danson, F.S.S., V.P.*

Gentlemen, called to address you on the close of an eighth session, I find the task as easy and agreeable as it is honorable. I have nothing to remind you of that is not pleasant to remember. We still prosper; and our prosperity exhibits all the conditions of a natural and permanent progression. It is alike removed from the zeal that leads to exhaustion and the indifference that augurs decay.

The Session has afforded us 20 meetings, and we have heard read and have discussed as many papers: some of them admirable alike in design and execution, and all of them worthy of the attention they have received. I shall make no effort to place these papers in the order of their respective merits. Where, as here, excellence is in any degree general, particular eulogy, awarded on the dictum of individual taste, might well be deemed invidious. Nor would I willingly move one step towards enduing the friendly competition hitherto so fruitful of good, with the meaner aspect of personal rivalry.

Their subjects have had relation, more or less distinct, to our three lines of study—Archæology, Literature, and Science—in proportions not very far from equal. Such difference as there is, however, affords some ground for the inference that Archæology, our first chosen subject, is receiving least, and science, our last chosen, receiving most attention. In view of the care and skill constantly evinced by our honorary secretary in the arrangements for our meetings, this preponderance, slight as it is, can hardly be deemed accidental. And perhaps we should do well to receive it as a warning that, in proportion as our Society expands its operations, the topics most nearly allied in character with the interests of the passing moment are likely, if our archæological and literary members do not come to our rescue, to usurp an undue share of our time. And it were surely not well that the hours we spend here, saved—as for most of us they must be—from days of needful and unchosen labour, should be devoted, in anything more than their due proportion, to topics suggested by, or suggestive of, the very toil from which we here seek relaxation. Having myself aforetime been somewhat urgent in favor of our scientific section, it may the better become me to mark the earliest indication of any such tendency.

Touching more generally the results of the Session, I am conscious that I shall best interpret the sense of the Society in speaking with much modesty. All we have yet achieved must needs be dwarfed by comparison with what we have openly proposed, and do earnestly propose, yet to do. Thus much I may say—that our numbers have been largely increased, and that, as the forthcoming volume of our Transactions will prove, the larger body has displayed a commensurate increase of activity and power.

In our Archæological Section, the earliest periods of British history have received additional illustration from Mr. Hinde's paper on The Ancient History of Northumbria, and Mr. Harwicke's on The Roman Remains at Walton-le-dale; and the mediæval and modern periods, find able contributions in Mr. Marsh's Account of the Warrington Grammar School, Mr. Stonehouse's Day in Low Furness, and Mr Boardman's Notes on Liverpool a Hundred Years ago.

The papers of the Literary Section have been even more various. Mr. Buxton on The Saxon Element in Poetic Composition, and Mr. Ramsay on The Character of Hamlet, have given to criticism the first place. We are also indebted to Mr. Buxton for an historical paper on The Rise of the Manufacturing Towns of our District, and to Mr. Moore for a practical and philosophical essay on The Poor-law System as it affects Education and Morals; while Mr. Dove's exhibition of, and comments on, some original letters of Dr. Franklin have contributed to render more vivid and more truthful our conceptions of the character of that great man. In the statistical—the least inviting—department of the Section, we have had two elaborate papers on the population of Liverpool and of the Manchester District.

The Scientific Section has received from Mr. Tudor some valuable Zoological Notes on the Banks of the Mersey; from Mr. Moore illustrations of several curious facts connected with mammalia; and from Mr. Gregson the continuation of a remarkable paper on The Lepidoptera of the Liverpool District. In microscopic botany, we are indebted to Mr. Sansom for a precise description of a fungoid disease in the pear. Mr. Hartnup has favored us with an excellent practical description of the best marine meteorological instruments, and of the means of testing their accuracy—a subject, the importance of which in this locality can hardly be over-estimated; and has also given to us the results obtained during four years, from the self-registering anemometer and rain gauge. And in two of the most important papers read during the Session, (those of Dr. Oppert, on The Cuneiform inscriptions of Ancient Babylon, and of Mr. Wright, on The Ethnology of Britain at the close of the Roman Period,) we have had gratifying evidence of the recognition of our labours by men to work in association with whom is itself an honor. Of the paper read this evening it were needless of me to say one word. It is before you and you have shown that you know all its value.

This enumeration cannot be made without some feeling of pride; but it is of more importance to remark that there may—unless I am much mistaken—be gathered from the records of the closing Session evidence in no degree faint or doubtful that there is amongst us a very general disposition to use, and to seek to increase, our knowledge for purposes ever growing higher and wider as we advance—a better, a more elevated, and a more just appreciation of the value of knowledge for its own sake, and of the very search for it as an ennobling means of mental discipline. To wish that this tendency may gather strength with every succeeding Session, and that under its influence we may continue to regard the future with hopes ever growing brighter and better founded as we proceed, is only to desire that our Society may realise at once its legitimate destiny, and the loftiest to which we can reasonably aspire.

Thanks were then voted to the Rev. Dr. Thom and Mr. Danson, as the two vice-presidents who had been most frequently in attendance. Thanks were also voted to Dr. Hume, and the proceedings terminated.

APPENDIX.

EXCURSION TO PRESTON.

On Tuesday the 24th of June, the members and their friends undertook an excursion to Preston; in compliance with the expressed wish of several gentlemen connected with that town. The party left Liverpool by an early train, and arrived at Preston shortly after nine o'clock. A local committee of which Mr. W. Dobson was secretary, had made arrangements for the day, and several of its members attended at the station to receive the visitors. Other members of the Society, from Manchester, Lancaster, Warrington, Burnley, &c., joined them shortly afterwards.

The committee had brought together, for the occasion, an interesting collection of local objects; forming a temporary Museum, illustrative of Preston and its neighbourhood.* These were laid out in the rooms of the Institution Avenham, the use of which had been granted for the purpose of the meeting. The inspection of the collection was the first part of the proceedings: and here the visitors were joined by a large number of ladies and gentlemen of Preston and the neighbourhood.

An adjournment then took place to Dr. Shepherd's† library in the same building, where a *dejeuner* was prepared by the hospitable arrangements of the local committee. Before retiring, the company resolved that they would confine their attention to Walton-le-dale and Penwortham; leaving their visit to Ribchester to take place on some other occasion.

Crossing the Ribble from Avenham Terrace, the party proceeded to Walton, distant about a mile. Here the precise positions were pointed out in which the Roman remains‡ had been discovered; and Mr. Hardwick drew attention to the terraces, the former bed of the river, &c. Engravings of the subject were handed round for inspection; and some of the objects themselves, which had not been procured for public purposes.

A pleasant walk along the bank of the river brought the company to Penwortham, about an equal distance on the other side of the town. Permission had been obtained, to examine the extraordinary mound known as the "Castle Hill," on which a Saxon castle is said to have stood. A large trench had been cut on the previous day, under the superintendence of Mr. Willacy, the agent for the property. Objects in wood iron and lead had been discovered, with numerous bones of animals. On this occasion, a wooden structure of oak and hazel was discovered; apparently the framework of a house inside the hill. The floor was paved with river boulders. [The excavations were continued on the following day, when several additional objects were brought to light, including a complete spur, apparently of about the 10th century.] An account of them, with illustrations, will be given in the next volume of the Society's transactions.

Returning to Preston at four o'clock, between fifty and sixty ladies and gentlemen sat down to dinner in the Assembly-room of the Bull Hotel. The chair was occupied by Richard Threlfall, Esq., Mayor of Preston. Several interesting sentiments were proposed and suitably responded to. The members from a distance retired in time to meet their respective trains; and the company separated finally about eight o'clock.

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* The principal contributors were, the Mayor, the Town Clerk, Miss Farington of Worden, R. Townley Parker, Esq., M.P, the Ribble Company, the Council of the Institute, the Rev. W. Thornber, Mr. Dearden, Mr. Hardwick, Mr. Hoghton of Bold, Alderman Brown, &c.

† Dr. Shepherd was Mayor of Preston in 1756.

‡ Transactions, p. 127.

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TRANSACTIONS.

ON THE LANGUAGE OF LANCASHIRE, UNDER THE ROMANS.

By R. G. Latham, M.A., M.D., F.R.S.

(Read 8th January, 1857.)

In the present paper, advantage is taken of the local character of the Historic Society of Lancashire and Cheshire, to make the name of the county serve as a special text for a general subject. What applies to Lancashire applies to any county in Roman England.

The doctrine is as follows—that in Lancashire particularly, and in England in general, the predominant language for the first five centuries of our era was not Latin but British.

The writer is so far from laying this down as a novelty, that he is by no means certain, that it may not be almost a truism. He is by no means certain, that there is a single one of those to whom he addresses himself, who may now hold, or even have held, the opposite opinion. He is fully aware that excellent authorities have maintained both sides of the question. He is only doubtful as to the extent to which one doctrine may preponderate over the other.

If the question were to be settled by an appeal to the history of the more influential opinions concerning it, we should find that, in a reference to the earliest and the latest of our recent investigators, Dr. Prichard would maintain one side of the question, Mr. Wright another. The paper of the latter, having been printed in the Transactions of the Society, is only alluded to. The opinion of Dr. Prichard is conveyed in the following extract—"The use of languages really cognate must be allowed to furnish a proof, or at least a strong presumption, of kindred race. Exceptions may indeed, under very peculiar circumstances, occur to the inference

founded on this ground. For example, the French language is likely to be the permanent idiom of the negro people of St. Domingo, though the latter are principally of African descent. Slaves imported from various districts in Africa, having no common idiom, have adopted that of their masters. But conquest, or even captivity, under different circumstances, has scarcely ever exterminated the native idiom of any people, unless after many ages of subjection; and even then, vestiges have perhaps always remained of its existence. In Britain, the native idiom was nowhere superseded by the Roman, though the island was held in subjection upwards of three centuries. In Spain and in Gaul, several centuries of Latin domination, and fifteen under German and other modern dynasties, have proved insufficient entirely to obliterate the ancient dialects, which were spoken by the native people before the Roman conquest. Even the Gypsies, who have wandered in small companies over Europe for some ages, still preserve their original language in a form that can be everywhere recognised."*

Upon the whole, I think that the current opinion is in favour of the language of Roman Britain having been Latin; at any rate I am sure that, before I went very closely into the subject, my own views were, at least, in that direction. "What the present language of England would have been, had the Norman conquest never taken place, the analogy of Holland, Denmark, and many other countries enables us to determine. It would have been as it is at present. What it would have been had the *Saxon* conquest never taken place, is a question wherein there is far more speculation. Of France, of Italy, of Wallachia, and of the Spanish Peninsula, the analogies all point the same way. They indicate that the original Celtic would have been superseded by the Latin of the Conquerors, and consequently that our language, in its later stages, would have been neither British nor Gaelic, but Roman. Upon these analogies, however, we may refine. Italy was from the beginning, Roman; the Spanish Peninsula was invaded full early; no ocean divided Gaul from Rome; and the war against the ancestors of the Wallachians was a war of extermination."†

In these preliminary remarks we find a sufficient reason for going specially into the question; not, however, as discoverers of any new truth, or as those who would correct some general error, but rather, in a

* Eastern Origin of the Celtic Languages, p. 8. † English Language, first edition, p. 68.

judicial frame of mind, and with the intention of asking, first, how far the actual evidence is (either way) conclusive; next, which way (supposing it to be inconclusive) the presumption lies; and third, what follows in the way of inference from each of the opposing views.

What is the testimony of the classical writers, *subsequent to the reduction of Britain*, to the effect that the Romans, when they conquered a Province, established their language? I know of none. I know of none, indeed, *anterior* to the Britannic conquest. I insert, however, the limitation, because in case such exist, it is necessary to remember that they would not be conclusive. The practice may have changed in the interval.

Is there anything approaching such a statement? There is a passage in Seneca to the effect "that where the Roman conquers there he settles."

But he conquered Britain. Therefore he established his language. Add to this that where he established his own language, there the native tongue became obliterated. Therefore the British died off.

If so, the Angles—when they effected *their* conquest—must have displaced, by their own English, a Latin rather than a British, form of speech.

But is this the legitimate inference from the passage in question? No. On the contrary, it is a conclusion by no means warranted by the premises. Nevertheless, as far as external testimony is concerned, there are no better premises to be found.

But there is another element in our reasoning. In four large districts at least,—in the Spanish Peninsula, in France, in the Grisons, and in the Danubian Principalities—the present language is a derivative from the Latin, which was, undoubtedly and undeniably, introduced by the Roman conquest. From such clear and known instances, the reasoning to the obscure and unknown is a legitimate analogy, and the inference is that Britain was what Gallia, Rhœtia, Hispania, and Dacia were.

In this we have a second reason for the fact that there are many who, with Arnold, hold, that except in the particular case of Greece, the Roman world, in general, at the date of the break-up of the Empire, was Latin in respect to its language. At any rate, Britannia is reasonably supposed to be in the same category with Dacia—a country conquered later.

On the other hand, however, there are the following considerations.

I. In the first place the Angle conquest was gradual; so gradual as

to give us an insight into the character of the population that was conquered. Was this (in language) Latin? There is no evidence of its having been so. But is there evidence of its having been British? A little. How much, will be considered in the sequel.

II. In the next place the Angle conquest was (and is) incomplete; inasmuch as certain remains of the earlier and non-Angle population still exist. Are these Latin? Decidedly not; but on the contrary British,—witness the present Britons of Wales, and the all but British Cornishmen, who are now British in blood, and until the last century were, more or less, British in language as well.

But this is not all. There was a third district which was slow to become Angle, viz.: part of the mountain district of Cumberland and Westmoreland. What was this before it was Angle? Not Roman but British.

Again—there was a time when Monmouthshire, with (no doubt) some portion of the adjoining counties, was in the same category in respect to its *non*-Angle character with Wales. What was it in respect to language? Not Roman but British.

Again—*mutatis mutandis*. Devonshire was to Cornwall as Monmouth to Wales. Was it Roman? No—but, on the contrary, British.

Now say, for the sake of argument, that Cornwall, Wales, and Cumberland were never Roman at all, and consequently, that they prove nothing in the question as to the introduction of the Latin language. But can we say, for even the sake of argument, that Devon and Monmouth were never Roman? Was not, on the contrary, Devon at least, exceedingly Roman, as is shewn by the importance of Isca Danmoniorum, or Exeter.

Or, say that the present population of Wales is no representative of the ancient occupants of that part of Britain, but, on the contrary, descended from certain immigrants from the more eastern and less mountainous parts of England. I do not hold this doctrine. Admitting it, however, for the sake of argument—whence came the present Welsh, if it came not from a part of England where British, rather than Latin, was spoken? There must have been British somewhere; and probably British to the exclusion of Latin.

The story of St. Guthlac of Croyland is well-known. It runs to the effect that being disturbed, one night, by a horrid howling, he was seriously

alarmed, thinking that the howlers might be *Britons*. Upon looking-out, however, he discovered that they were only devils—whereby he was comforted, the Briton being the worse of the two. Now the later we make the apochryphal story, the more it tells in favor of there having been Britons in Lincolnshire, long after the Angle conquest. Yet Lincolnshire (except so far as it was Dane,) must have been one of the most Angle portions of England. In France, Spain, Portugal, the Grisons, Wallachia or Moldavia, such devils as those of St. Guthlac would have been Romans.

As the argument, then, stands at present, we have traces of the British as opposed to the Angle, but no traces of the Latin in similar opposition.

Let us now look at the *analogies*, viz: Spain, (including Portugal,) France, Switzerland, and the Danubian Principalities; in all of which we have had an aboriginal population and a Roman conquest, in all of which, too, we have had a third conquest subsequent to that by Rome—even as in Britain we have had the triple series of (A) native Britains, (B) Roman conquerors, (C) Angles.

What do we find? In all but Switzerland, remains of the original tongue; in all, without exception, remains of the language of the population that conquered the Romans; in all, without exception, something Roman.

In Britain we find nothing Roman; but, on the contrary, only the original tongue and the language of the third population.

I submit that this is strong *primâ facie* evidence in favour of the Latin having never been the general language of Britain. If it were so, the area of the Angle conquest must have exactly coincided with the area of the Latin language. Is this probable? I admit that it is anything but highly improbable. The same practicable character of the English parts of Britain (as opposed to the Welsh, Cornish, and Cumbrian) which made the conquest of a certain portion of the Island easy to the Romans as against the Britons, may have made it easy for the Angles as against the Romans; and *vice versa*, the impracticable character of Wales, Cornwall, and Cumberland, that protected the Britons against their first invaders, may have done the same for them against the second. If so, the two areas of foreign conquest would coincide. I by no means undervalue this argument.

It is almost unnecessary to say that the exact conditions under which Britain was reduced were not those of any other Roman Province.

In respect to Spain, the Roman occupancy was *early*, having begun long before that of Northern and Central Gaul, having begun during the Punic wars, and having become sufficiently settled by the time of Augustus to command the attention of Strabo on the strength of the civilization it had developed. In Spain, then, there was priority in point of time to account for any extraordinary amount of Roman influences.

Gaul, with the exception of the earlier acquisitions in the Narbonensis, was the conquest of one of the most thorough-going of conquerors. The number of enemies that he, Cæsar, had slaughtered has been put at 1,000,000. Without knowing the grounds of this calculation, we may safely say that his campaigns were eminently of a destructive character.

The conquerors of the Breuni, Genauni, and similar occupants of those parts of Switzerland where the Rumonsch Language (of Latin origin) is now spoken, were men of similar energy. Neither Drusus nor Tiberias spared an enemy who opposed. Both were men who would "make a solitude and call it peace."

That Trajan's conquest of Dacia was of a similar radical and thorough-going character is nearly certain.

Now, the evidence that the conquests of the remaining provinces were like those of the provinces just noted, is by no means strong. At the same time, it must be admitted that the analogy established by four such countries as Gaul, Spain, Switzerland, and Moldo-Wallachia is cogent. What was the extent to which Africa, Pannonia, Illyricum, Thrace, and the Mœsias were Romanized? Of Asia, I say nothing. It was sufficiently Greek to have been in the same category with Greece itself, and in Greece itself we know that no attempts were made upon the language.

Africa was Latin in its literature; and, at a later period, pre-eminently Latin in its Christianity. But the evidence that the vernacular language was Latin is null, and the presumptions unfavourable. The Berber tongue of the present native tribes of the whole district between Egypt and the Atlantic is certainly of high antiquity; it being a well-known fact, that in it, several of the names in the geography of classical Africa are significant. Now this is spread over the country indifferently. Neither does it show

any notable signs of Latin intermixture. Neither is there trace, or shadow of trace, of any form of speech of Latin origin throughout the whole of Tunis, Tripoli, Algiers or Morocco.

In Pannonia and Illyricum, the same absence of any language of Latin origin is manifest. Pannonia and Illyricum have had more than an average amount of subsequent conquerors and occupants—Goths, Huns, Avars, Bulgarians, Sclavonians, Hungarians, Germans. That the Slovak, however, in the north, and Dalmatian forms of the Servian in the south, represent the native languages is generally admitted—now, if not long ago. These, then, have survived. Why not, then, the Latin if it ever took root?

In respect to Thrace, it is just possible that it may have been, in its towns at least, sufficiently Greek to have been in the same category with Greece proper. I say that this is just possible. In reality, however, it was more likely to be contrasted with Greece than to be classed with it. One thing, however, is certain, viz.:—that the country district round Constantinople was never a district in which Latin was of vernacular. Had it been so, the fact could hardly have been unnoticed, or without influence on the unequivocally Greek Metropolis of the Eastern Empire.

If the doctrine that Thrace may have been sufficiently Greek to forbid the introduction of the Latin be doubtful, the notion that the Mœsias were so is untenable Yet the Latin never seems to have been vernacular in either of them. Had it been so, it would probably have held its ground, especially in the impracticable mountains and forests of Upper Mœsia or the modern Servia. Yet where is there a trace of it? Of all the Roman Provinces, Servia or Upper Mœsia seems to be the one wherein the evidence of a displacement of the native, and a development of a Latin form of speech, is at its *minimum*, and the instance of Servia is the one upon which the analogous case of Britain best rests.

The insufficiency of the current reasons in favour of the modern Servian being of recent introduction, have been considered by me elsewhere.

Now comes the notice of a text which always commands the attention of the Ethnological philologue, when he is engaged upon the Angle period of our island's history. It refers to the middle of the eighth century, the era of the Venerable Bede, from whose writings it is taken. I give it *in extenso*. It runs "Hæc in presenti, juxta numerum librorum quibus lex divina scripta est, quinque gentium linguis, unam eandemque summæ

veritatis et veræ sublimitatis scientiam scrutatur et confitetur; Anglorum, videlicet, Brittonum, Scottorum, Pictorum et Latinorum quoæ meditatione scripturarum, cæteris omnibus est facta communis.*

That the Latin here is the Latin of Ecclesiastical, rather than Imperial Rome, the Latin of the Scriptures rather than classical writers, the Latin of a written book rather than a Lingua Rustica, is implied by the context.

Should this, however, be doubted, the following passage, which makes the languages of Britain only four, is conclusive—"Omnes nationes et provincias Britanniæ, quæ in *quatuor* linguas, id est Brittonum, Pictorum, Scottorum et Anglorum divisæ sunt, in ditione accepit."†

It is the first of these two statements of Beda's that the following extract from Wintoun is founded on.

Cronykil, I. xiii. 39.

Of Langagis in Bretayne sere
I fynd that sum tym fyf thare were:
Of Brettys fyrst, and Inglis syne,
Peycht, and Scot, and syne Latyne.
Bot, of the Peychtis, is ferly,
That ar wndon sá hályly,
That nowthir remanande ar Language,
Næ' succession of Lynage:
Swá of thare antiqwytè
Is lyk bot fabyl for to be.

But the Latin of the scriptures may have been the Latin of common life as well. Scarcely. The change from the written to the spoken language was too great for this. What the latter would have been we can infer. It would have been something like the following "Pro Deo armur et pro Xristian poblo et nostro commun salvament d'ist di en avant, in quant Deus savir et poder me dunat, si salvarai eo cist meon fradre Karlo, et in ajudha et in cadhuna cosa, si com om per dreit son fradra salvar dist, in o quid il me altresi fazet: et ab Ludher nul plaid nunquam prindrai uni, meon vol, cist meon fradre Karle in damno sit."

This is the oath of the Emperors Karl and Ludwig, sons of Charlemagne, as it was sworn by the former in A.D. 842. It is later in date than the time of Beda by about a century; being in the Lingua Rustica of France. Nevertheless, it is a fair specimen of the difference between the spoken languages of the countries that had once been Roman Provinces, and the

* *Hist. Eccl. l.* 1, *c.* 1. † *Eccl. Hist.* iii, 6.

written Latin. Indeed, it was not Latin, but Romance; and, in like manner, any vernacular form of speech, used in Britain but of Roman origin, would have been Romance also.

The conclusion which the present notice suggests is—

That the testimony of authors tells neither way.

That the presumptions in favour of the Latin which are raised by the cases of Gaul, Spain, Rhœtia, and Dacia, are anything but conclusive.

That the inferences from the earliest as well as the latest data as to the condition of *English* Britain, the inferences from the Angle conquest, and the inferences from the present language of Wales, are decidedly against the Latin.

I may, perhaps, be allowed to conclude by a reference to a paper already alluded to, as having been laid before the present Society, by Mr. Wright. This is to the effect, that the Latin reigned paramount not only in England, but in Wales also, under the Roman dominion; the present Welsh being of recent introduction from Armorica.

That the population was heterogeneous is certain, the Roman Legionaries being, to a certain extent, other than Roman. It is also certain that there was, within the island, at an early period, no inconsiderable amount of Teutonic blood. It is certain, too, that the name *Briton* had different applications at different times.

If so, the difference between Mr. Wright and myself, in respect to the homogeneousness or heterogeneousness of the Britannic population, is only a matter of degree.

In respect to the particular fact, as to whether the British or Latin language was the vernacular form of speech, we differ more decidedly. That the British was unwritten and uncultivated is true; so that the exclusive use of the Latin for inscriptions is only what we expect. The negative fact that no British name has been found inscribed, I by no means undervalue.

The *preponderance* however, of a Non-British population, and the use of the Latin as the *vernacular* language, are doctrines, which the few undoubted facts of our early history impugn rather than verify.

The main difficulty which Mr. Wright's hypothesis meets—and it *does* meet it—lies in the fact of the similarity between the Welsh and Armorican being too great for anything but a comparatively recent separation to

account for. Nevertheless, even this portion of what may be called the Armorican hypothesis, is by no means incompatible with the doctrine of the present paper. The Celtic of Armorica may as easily have displaced the *older* Celtic of Britain (from which, by hypothesis, it notably differed) as it is supposed to have displaced the Latin.

I do not imagine this to have been the case; indeed I can see reasons against it, arising out of the application of Mr. Wright's own line of criticism.

I think it by no means unlikely that the argument which gives us the annihilation of the British of the British Isles, may also give us that of the Gallic of Gaul. Why should Armorica have been more Celtic than Wales? Yet, if it were not so, whence came the Armorican of Wales? I throw out these objections for the sake of stimulating criticism, rather than with the view of settling a by no means easy question.

ON THE IMPORTANCE OF TESTING CHRONOMETERS BEFORE THEY ARE USED AT SEA, WITH EXAMPLES TO SHOW HOW THEIR MOST COMMON FAULTS MAY BE DETECTED.

By John Hartnup, F.R.A.S.

(Read 15th January, 1857.)

It is well known by those who have had much experience with chronometers, that some of the most serious defects to which they are liable cannot possibly be detected by an inspection of the works, however carefully they may be examined by the most skilful chronometer maker. It is also well known that the mariner, unaided, has no means whatever of efficiently testing the quality of a chronometer. From the first introduction of marine timekeepers, as an aid to navigation, it has been the practice to test all those employed in the British Navy at the Royal Observatory at Greenwich, previous to their being placed in the hands of the officers appointed to use them at sea. But the merchant captain has never been able to avail himself of this privilege; and until the Corporation of Liverpool made the necessary provision in this port, a few years ago, he had no authority to appeal to for information as to the quality of a chronometer, notwithstanding that this instrument is used, almost exclusively, for so important an object as that of finding the longitude of a ship at sea.

The subject is so novel, that some explanation appears necessary, to show the merchant captain how the chronometer can be tested for him, and what degree of confidence he may place in the tests which are applied, in an establishment provided with the necessary instruments and apparatus for making the experiments, and in which there is a proper guarantee for the records being faithfully kept for his inspection. In giving this explanation, examples will be introduced to which we shall frequently refer, in order to explain the nature of the most common faults which are found to exist in the chronometers now in use in the merchant service. These examples have been taken from the records of the Liverpool Observatory. In the following (Nos. 1 to 4), the daily rate is given in each, for twenty days in succession; and we trust that this period, short as it is, will be seen to be

sufficiently long to prove that the faults in Nos. 1, 2 and 3 rendered them unfit for sea use at that time; but that confidence might have been safely placed in No. 4.

EXAMPLES.

No. 1. New and Gaining on its Rate.		No. 2. Compensation not properly effected.		No. 3. Rate irregular in the same Temp.		No. 4. Rate steady and Compensation good	
Daily Rate. Gaining.	Temp.	Daily Rate. Losing.	Temp.	Daily Rate. Gaining.	Temp.	Daily Rate. Gaining.	Temp.
s.	°	s.	°	s.	°	s.	°
0.1	60	2.2	52	3.2	67	0.3	59
0.3	61	2.0	52	5.9	64	0.3	60
0.4	62	2.3	54	5.8	64	0.4	60
0.4	63	2.4	55	5.7	64	0.2	63
0.5	61	2.7	56	2.3	66	0.2	63
0.6	60	2.8	56	5.0	63	0.2	59
0.9	60	11.6	83	5.1	62	0.4	80
1.1	61	11.5	83	4.7	66	0.4	84
1.5	58	11.8	84	3.8	69	0.4	84
1.4	56	11.9	84	3.6	63	0.3	65
1.4	55	2.6	55	0.6	69	0.7	65
1.5	54	3.0	55	0.8	69	0.7	63
1.6	55	2.7	54	0.2	68	0.6	62
1.7	53	2.8	55	0.3	68	0.8	60
2.0	53	3.1	56	1.0	69	0.8	59
2.0	54	3.2	57	2.2	64	0.7	60
1.9	52	3.2	57	2.1	63	0.7	58
2.0	53	2.9	56	2.6	63	0.6	59
2.1	55	3.0	56	5.4	62	0.5	58
2.4	57	2 2	53	6.1	62	0.6	58

In the choice of a chronometer, the object of the mariner should be to select one which keeps a steady rate in those temperatures to which he will be most frequently exposed at sea; and the uniformity of the daily rate of No. 4, in temperatures ranging from 58° to 84,° would doubtless lead him to select this for a warm climate. Without such records to refer to, he has nothing to guide him in his choice.

The four chronometers here selected, appeared equally good to the eye, although three of them were quite unfit to take to sea at that time. Yet, a few months after the above results were obtained, No. 1 did keep, and Nos. 2 and 3 were made to keep rates nearly as steady as No. 4.

The way in which these improvements were brought about, we will endeavour to explain, beginning with No. 1. When new, chronometers have a tendency to gain on their rates, for periods varying from two or three, to six or eight months. This tendency to gain, appears to be caused by a change which gradually takes place in a new balance spring; the spring must be made hard to insure good performance, and the harder the spring the longer the chronometer appears to gain. Old chronometers, with new balance springs, gain as much as new chronometers. The effect of this tendency to gain is shown in No. 1. On the first day of the twenty, the daily rate was one-tenth of a second; on the last day, it was two seconds and four tenths. In this case, the chronometer continued to gain for upwards of four months, and the rate increased from one-tenth of a second to upwards of ten seconds a day. Five months subsequent to the period at which these results were obtained, the rate became steady, and the chronometer might then have been taken to sea, with every probability of good performance. A chronometer having this fault, might increase its gaining rate ten or fifteen seconds a day, in a voyage of three or four months; and the mariner not knowing the cause, would become dissatisfied, and possibly part with it at a great sacrifice, just at the time when good performance might be expected from it. It is quite a common thing for captains to bring their new chronometers to the Observatory *after*, instead of *before*, the first voyage, for the purpose of having them tested; in consequence of bad performance during the voyage. In such cases, we frequently find the fault to be this tendency to gain, from being new, and notwithstanding the great increase of rate which has taken place, it often happens that the tendency to gain has then nearly or quite ceased; and without anything being done to the chronometers, they are generally found to give satisfaction the next voyage.

We will now proceed to an explanation of the cause of the irregularity in the daily rate exhibited in No. 2. This is a case of imperfect compensation for change of temperature. The chronometer loses nine seconds a day more in 84° than it does in 55°. The shipmaster in possession of a timekeeper with this imperfection might be subjected to the most serious inconvenience, and possibly, after giving it a trial for a voyage or two, he would come to the conclusion that it was worthless, and part with it for a fault which could be removed for a few shillings. A chronometer maker who understands his business, on being shown the

tabulated results here given, would instantly know how to make the necessary alteration; the weights on the compensation balance, in this case, should be shifted a little towards the ends of the curved arms. In No. 4, it will be seen that no sensible alteration of rate took place on changing the temperature from below 60° to above 80°, and there is nothing whatever indicated in the performance of No. 2, to lead us to suppose that it might not be made to perform equally well. The defect is one of very common occurrence, as may be seen by our records; hundreds of similar cases have been detected during the past ten years at the Liverpool Observatory. It sometimes happens that chronometers are sold with both the faults shown in Nos. 1 and 2, and the increase of gaining rate during the first voyage is on some occasions so nearly equal to the loss from defective compensation, that the ship's longitude by chronometer is found to be sensibly accurate. On the next voyage, the tendency to gain having ceased, defective compensation acts alone, and the result is great disappointment. We have known captains in such cases to say that the performance of the chronometer was satisfactory during the first voyage, but that it had never gone well since.

In No. 3 the irregularities cannot be attributed to either of the faults exhibited in Nos. 1 and 2. The change of rate is not so gradual, continuous, and in the same direction as in No. 1; nor is it dependent on temperature, as in No. 2. The irregularity is quite as decided as in either of the preceding cases, but the cause is not so apparent; precisely similar irregularities are found to arise from a great variety of causes. The oil may be glutinous, or it may have escaped from one or more of the jewelled holes; a jewel may be loose or defective; the escapement may be imperfectly adjusted, or some other imperfection may exist, which the skilful workman will probably detect on taking the chronometer to pieces. Another and similar trial will prove whether he has detected and removed the fault. Sometimes the chronometer may pass through the hands of the most experienced chronometer maker several times, before he detects the fault, for it requires, on some occasions, no ordinary amount of skill; but the test, subsequent to the last examination by the maker, will show if the desired improvement is effected.

Supposing, therefore, that the mariner has access to an establishment in which experiments, similar to those exhibited in the preceding examples,

are made for him, he can himself, with the greatest ease, detect those faults which chronometers are so frequently found to have, and which are to him of so much importance. He has only to look down the column of daily rates, and to see that the temperature, shown in the side column, has been changed 20° or 30°. The difference between the results given from day to day will indicate at once if the chronometer has a steady rate. He must, however, bear in mind, that absolute perfection is impossible, variations of a few tenths of a second will take place. Chronometers which will bear a change of temperature of 20° or 30°, and in which the extreme difference between any two days for thirty or forty days in succession, does not amount to more than one second, or one second and a half, may be safely taken as first-rate marine timekeepers. If it were possible to make chronometers perfect in all other respects, the defect of the ordinary compensation balance would alone produce a change in the daily rate, as large as that above named. This may be seen in the following examples, in which we have selected three chronometers which were found to have nearly the same rates in 50° and 80°. By examining the rates about half way intermediate between 50° and 80°, it will be seen that each of them gained from one second to one second and a half more, than they did in either the high or low temperatures. The daily rates here given are all *gaining*, and the averages have been taken instead of the rate for each day, as in the preceding examples, the errors to be detected being very small.

EXAMPLES.

No. 5. Mean Daily Rate. Gaining.	Temp.	No. 6. Mean Daily Rate. Gaining.	Temp.	No. 7. Mean Daily Rate. Gaining.	Temp.
s.	°	s.	°	s.	°
0.2	50	0.2	50	0.0	50
1.9	65	1.9	65	1.7	65
0.8	80	0.3	80	0.8	80

These rates were obtained from chronometers having the ordinary compensation balance. This balance is in use in the merchant service almost without exception. It does not perfectly compensate for the change of elasticity in the balance spring. With it the chronometer can be made to go the same in any *two* temperatures, but it cannot be made to go precisely the same in any *three* temperatures. All chronometers with this description of balance go faster in some particular temperature than they do in any other temperature, and the chronometer maker has the power of fixing

this maximum gaining rate, either in a high, low, or medium temperature, at pleasure; by so adjusting the weights, on the compensation balance, as to give the chronometer the same rate in two temperatures at equal distances from that in which the maximum gaining rate is required. In example No. 6, the maximum gaining rate is fixed at 65°, as near as possible, and the loss at 50° is one second and seven tenths, and at 80° one second and six tenths. The temperature at which the maximum gaining rate is fixed, is a matter of the highest importance in chronometers with this description of balance; because we find, that the further this point is departed from, the greater will be the variation of rate for a given change of temperature. At the distance of 15°, as we have seen, the change of rate is about one second and a half, but at 30° distance it is found to be much more than twice that amount. Ships at sea are for the most part exposed to temperatures ranging from 50° to 80°, and captains should therefore take care that their chronometers have as nearly as possible the same rate in these two temperatures.* Suppose a chronometer with the ordinary compensation balance to go *mean time* in 50° and 80°, then, as we have seen, it may be expected to gain about one second and a half in 65°; in 90° it would probably lose about two seconds, and in 40° it would probably lose from two to four seconds a day. In temperatures below 40° there is less certainty; the thickening of the oil and the consequent decrease in the arc of vibration, appear to be the cause of this. By winding up or letting down the main spring, and thereby increasing or diminishing its power, the maker can cause the chronometer balance to vibrate in a large or a small arc; and there is a certain length of the balance spring, at which the daily rate of the chronometer is found to be the same, whether the arc of vibration be large or small. Now it is very probable that some makers so adjust the balance spring as to cause the chronometer to have the same rate in the large as in the small arcs; and that others so adjust it as to make the chronometer gain more or less in the small arcs. In the former case, the loss from additional friction, caused by the thickening of the oil, together with that from the defect of the balance, might be excessive; while, in the latter case, it would be more or less compensated for by the gain consequent on the diminished arc of vibration. Mariners who have chronometers compensated for high tem-

* This circumstance is either not known by chronometer makers, or it is not sufficiently attended to: the records of the Liverpool Observatory clearly prove this.

peratures, should, if possible, when in high latitudes, keep their time-keepers in a room with the temperature not much lower than 50°; as it is by no means unusual for us to meet with chronometers having rates nearly as steady as can be desired between 60° and 85°, but which will, nevertheless, in temperatures between 30° and 40°, change their rates ten, and even twenty seconds a day. Chronometers intended for constant use in low temperatures, should be compensated exclusively for low temperatures; for with the balance in common use, they cannot be made to go with any degree of satisfaction, through so long a range of temperature as 60° or 80°.

There cannot be a doubt as to the practicability of removing this defect in the ordinary balance, but two things above all others are necessary for its accomplishment. Our means of testing must be such as to satisfy the makers that we can detect at once and without delay any improvement which they may make; and mariners, who are generally the customers of the makers, must make themselves so far acquainted with the defects of chronometers as to show that they can understand and appreciate improvements. The Corporation of Liverpool made the necessary provision for testing chronometers in this port some years ago, and arrangements are now being made in London, under the direction of the Board of Trade, for testing chronometers in a manner precisely similar to that which we have practised for the past ten years. The testing apparatus for London has been made in this town under our immediate superintendence; and an officer has, by permission of the Corporation, been taught our method, in order that the same plan may be adopted in London. No chronometer maker, therefore, either in Liverpool or London, need now be in doubt for more than a few days, as to the efficiency of any improvement which he may attempt in the compensation balance of a chronometer; for the result of our experience is, that extreme cold is not necessary for the detection of this fault, and the higher temperatures are always under our control. Temperatures below 40° are not favourable for this experiment, unless the fluidity of the oil can be depended on, as a large change in the arc of vibration may render the result uncertain. In testing chronometers for this particular fault, it is however, desirable to elevate the temperature to 100° and upwards, and the oil by being subjected to very high temperatures, even for a few days, may become deteriorated. In the method which we are about to describe, it must therefore be understood that it is only practised at the special request of the maker, who supposes that he has

effected some improvement in the balance, and who intends to clean the chronometer again after the experiment. Unless this special request be made, 85° or 90° is the extreme heat to which we expose chronometers. This temperature is not greater than chronometers must occasionally be exposed to at sea, and we have found from long experience that no injury whatever is done to the oil by such exposure.

The following is the method of testing for improvements in the compensation balance, which we have always found both expeditious and successful. The maker is first requested to adjust the chronometer with the supposed improvement, to go the same in 50° and 80°. The experiment should be repeated several times to insure this being successfully done, and when it is found that changes from 80° to 50°, and from 50° to 80° can be made without altering the rate more than a few tenths of a second, the temperature is increased from 80° to 90°, from 90° to 100°, and from 100° to 110° in succession, and the change through these temperatures repeated two or three times. In chronometers with the ordinary balance the losing rate increases from 80° upwards, till at 110° it is found to amount to several seconds a day; but if the chronometer which is being tested cannot be made to lose more in 90°, 100°, and 110° than it does in 50° and 80°, the balance will be found to be, for all practical purposes, sensibly perfect.* Several chronometers which stood this test at the Liverpool Observatory, were afterwards tested by Professor Bond at the Cambridge Observatory in North America, during a very severe winter. The result was such as to show that when the oil did not become hard or glutinous, the rates of the chronometers remained as steady at several degrees below zero of Fahrenheit as they did in the higher temperatures, scarcely altering more than one second a day in a range of temperature exceeding 100 degrees; but that, if the oil became glutinous or hard, the chronometers, even with this balance, would lose considerably in temperatures below 30°.

Until chronometers used in the merchant service are more generally subjected to a test previous to their being purchased than they now are,

* We do not here allude to auxiliary compensations, the adjustments of which depend on the skill of the maker in each individual chronometer. If ever the balance now in use be superseded, it will be by an improvement of such a nature that if the balance compensates at all, the defect which we have attempted to describe will be removed without any additional trouble to the *springer*.

the makers will for the most part confine their improvements to the chronometers which are sent to the Royal Observatory at Greenwich for trial previous to purchase by the Admiralty. A chronometer sold to the Admiralty gives the maker a name, and this name has till recently been the only guarantee afforded to the merchant captain; hence we often find him in possession of a chronometer, the rate of which is quite as irregular as either of those exhibited in the first three examples.

The makers will exert themselves to the utmost, to supply the astronomer with a good chronometer, because they know that he can test its qualities, and appreciate its value; and that he will not be unreasonable in his expectations. Not that the astronomer is often perfectly satisfied with the performance of his instruments, but he generally makes himself too well acquainted with the failings to which they are liable, to allow himself to be deceived by such imperfections. Now, this is precisely what we wish to see in the mariner. He is called upon almost daily to exercise his judgment as to the degree of confidence which he is justified in placing in his instruments; and a knowledge of the imperfections to which they are liable is the only thing that can guide him to correct conclusions in these, to him, very important matters.

Since the preceding has been in type, I have received a letter from the Chairman of a Committee of Merchants, recently formed in New York, for the purpose of establishing an Observatory in that city, in all respects similar to the Liverpool Observatory, with the exception of the large and elaborately mounted equatorial. Agreeably to the request of the Chairman of this Committee, I have obtained estimates of the probable expense of a Transit Instrument, Sidereal and Solar Clocks, Testing Apparatus for Chronometers, Osler's Anemometer and Rain Gauge, &c., &c., which will be forwarded to New York as soon as possible. We may expect, therefore,

in a short time, to have in full operation a first-rate Nautical Observatory, on the other side of the Atlantic.

The present intention is to confine the business of this Observatory to such objects of practical utility as are more immediately connected with navigation. One or more time balls will be dropped daily, and especial attention will be paid to the rating and testing of Chronometers, for which it is intended to make ample accommodation. Now that the importance of the subject is beginning to be more clearly understood, other sea ports will doubtless soon follow the examples set by Liverpool, London and New York; and there will be no excuse for Chronometers being sent to sea without previously having them properly tested.

ON THE BATTLE OF BRUNANBURH;—AND THE PROBABLE LOCALITY OF THE CONFLICT.

By T. T. Wilkinson, F.R.A.S., &c., &c.

Read 4th December, 1856.

Section I. The Battle.

The Battle of Brunanburh forms one of the most important events in the history of the Anglo-Saxons. The preparations for the conflict exhausted the naval and military resources of the Danish colonists, and its issue consolidated the power and raised the Saxon name to the highest dignity among the states of Europe. Of upwards of 100,000 combatants engaged on both sides, probably the greatest portion perished on the field or during the pursuit; for of the confederated forces led by Anlaf, only a shattered remnant survived to tell the tale of their defeat. At the period of which we speak, Athelstan swayed the sceptre of the Anglo-Saxons with an authority unknown to his predecessors. The Scottish, the Cumbrian, and the Welsh Kings acknowledged his superiority, and those of Northumbria were barely able to maintain their independence. Sihtric, the son of Ingwar, and grandson of Ragnar Lodbrog, was then the reigning King of Northumbria, and Athelstan, during the first few years of his reign, found it necessary to conciliate his friendship by giving him his sister in marriage. The Danish king appears to have inherited much of the ferocity and most of the ability of his ancestors; for the Saxon Annals speak of him as the murderer of his own brother, and in Irish history he is chiefly noted for his piratical depredations. He, however, formally embraced Christianity on the occasion of his marriage, but soon after repenting of his change of religion, he put away his wife and resumed his idolatry. Athelstan determined to revenge this insult offered to his sister, and prepared to invade Northumbria; but Sihtric died before the preparations were completed. Notwithstanding this, Athelstan soon drove Anlaf and Godfrid, the sons and successors of Sihtric into exile, and annexed these counties to his own dominions.

During the struggle for possession, Ealdred was driven from his petty sovereignty of Bebbanburh; the castle at York, which held out for Anlaf

was demolished; and on a subsequent occasion Scotland was ravaged to the borders of the Highlands, while Athelstan's fleet spread terror and dismay to the extremities of Caithness. Anlaf fled to Dublin, where he was acknowledged as chief of the Anglo-Danes established on the east coasts of Ireland; and Godfrid, after being given up to Athelstan by Constantine, king of Scotland, escaped from court and betook himself to a life of piracy on the seas. "But Athelstan," as Sharon Turner remarks, "was not permitted to enjoy his triumph unmolested. The Northern chieftains saw that the progress of Athelstan's power was advancing to their complete subjection. The states on the Baltic were still full of fierce and active adventurers, who had to seek fame and fortune in other regions; and descendants of Ragnar Lodbrog yet existed, both enterprising and popular."* Constantine was preparing for retaliation, and Anlaf was planning to regain his power in Northumbria. "In Wales, the princes humbled by Athelstan, were ready to co-operate for the diminution of his strength. The Anglo-Danes, in Northumbria and East Anglia, beheld with displeasure the preponderance of the Saxon sovereign, and the petty state of Cumbria had no choice but to follow the impulse of the potent neighbours that surrounded it. All these powers confederated against Athelstan, and the united mass of their hostilities was increased by fleets of warriors from Norway and the Baltic. . . . . England had never been assailed before with a confederacy of so much power; formed with so much skill; and consisting of so many parts. . . . . Athelstan prepared to meet the storm with firmness and energy; and, to multiply his own means of defence, he circulated promises of high reward to every warrior who should join his standard. Thorolf and Egils, two of those navigating Vikingr whose weapons were ready for any enterprise, heard the tidings as they sailed by Saxony and Flanders. They came in the autumn with three hundred companions, to proffer their services to Athelstan, who gladly received them; and Rollo assisted him from Normandy."†

"Anlaf commenced the warfare by entering the Humber with a fleet of 615 ships. The governors whom Athelstan had left in Northumbria, together with their forces, were soon overpowered. Gudrekr fell, and Alfgeirr fled to his sovereign with the tidings."‡ This sudden and formid-

* Turner's *Anglo-Saxons*, vol. ii. p. 175. † *Ibid*, page 177. ‡ *Ibid*, page 178.

able invasion found Athelstan comparatively unprepared for effective resistance. He consequently had recourse to negotiations and fictitious offers of money in order to buy off his assailants, and to gain time, till all his own forces could be assembled. When all his preparations were completed, Athelstan closed the intercourse with Anlaf by informing him that Northumbria could not be ceded; but that he might withdraw from the country unmolested upon restoring the plunder he had secured, and acknowledging himself a subject of the Saxon king. Anlaf rejected the terms with disdain, and on a council of war being held it was decided that the Welsh and Danish leaders, Adalis and Hryngr, should make a night attack upon the advanced portion of Athelstan's army under the command of Alfgeirr and Thorold. "At night Adalis and Hryngr embodied their forces and marched on the Saxon camp. Werstan, Bishop [of Sherborne, who had replaced Athelstan in this portion of the camp] was the victim of the surprise. But Thorolf and Alfgeirr, who commanded in the district, roused their warriors and supported the attack. Adalis assaulted the division of Alfgeirr, and Hryngr directed himself to the allied vikingr. Vanquished by the impetuosity of his assailant, Alfgeirr fled from the field, and eventually the country. Adalis, flushed with his victory, turned on the others. Thorolf directed his colleague Egils to meet him; he exhorted his troops to stand close, and if overpowered to retreat to the wood. Egils obeyed, though with a force far inferior. The battle became warm. Thorolf fought with all the fury of valour, which was the pride of the day; he threw his shield behind him, and grasping his huge weapon with both hands, he prostrated his enemies with an irresistible strength. He forced his way at last to the standard of his adversary; he reached and killed him. His success animated his followers, and Adalis, mourning the death of Hryngr, gave way, and the combat discontinued."*

Great commanders, however, seldom choose to harass their forces by ineffectual skirmishing. They prefer to trust the whole to the chances of a single battle rather than incur the risk of ultimate defeat in a series of minor engagements. During the conflict just described, Anlaf was in hopes of deciding the contest by cutting off his antagonist by a night attack. He had ascertained the position of Athelstan's tent, and would no doubt have accomplished his object, if his design had not been penetrated by one of

* Turner's *Anglo-Saxons*, vol. ii. pp. 180, 181.

his former followers. The result, although favorable to Athelstan, was sufficient to convince him of the valor and skill of the minstrel commander, and he proceeded to arrange his forces for a decisive struggle. Anlaf did the same. A night of rest, some say two, preceded the awful conflict. Athelstan formed his array of battle. In the front he placed his bravest troops, with Egils at their head. He let Thorolf head his own band, with an addition of Anglo-Saxons, to oppose the irregular Irish, who always flew from point to point; no where steady, yet often injuring the unguarded. The warriors of Mercia and London, who were conducted by the valiant Turketul, the chancellor of the kingdom, he directed to oppose themselves to the national force of Constantine. He chose his own West-Saxons to endure the struggle with Anlaf his competitor. Anlaf observing his dispositions, in part imitated them. He obeyed the impulse of his hopes and his courage, and placed himself against Athelstan. One of his wings stretched to the wood against the battalia of Thorolf; it was very numerous, and consisted mostly of the disorderly Irish.

Brunanburh was the scene of action; and Thorolf began the battle he loved; he rushed forward to the wood, hoping to turn the enemy's flank; his courage was too impetuous and indiscriminate; his eagerness for the fray impelled him beyond his companions. Both were pressing fiercely and blindly onwards when Adalis darted from his ambush in the wood and destroyed Thorolf and his foremost friends. Egils heard the outcries of alarm; he looked to that quarter, and saw the banner of Thorolf retreating. Satisfied from this circumstance that Thorolf was not with it, he flew to the spot, encouraged his party, and renewed the battle. Adalis fell in the struggle.

At this crisis, while the conflict was raging with all the obstinacy of determined patriotism and courageous ambition; when missile weapons had been mutually abandoned; when foot was planted against foot, shield forced against shield, and manual vigour was exerted with every energy of destruction; when chiefs and vassals were perishing in the all-levelling confusion of war, and the numbers cut down were fiercely supplied with new crowds of warriors hastening to become victims; the chancellor Turketul made an attack which influenced the fortune of the day. He selected from the combatants some citizens of London, on whose veteran valour he could rely; to these he added the men of Worcestershire, and their leader, who

is called the magnanimous Singin. He formed these chosen troops into a firm and compact body, and placing his vast muscular figure at their head, he chose a peculiar quarter of attack, and rushed impetuously on his foe.

The hostile ranks fell before him. He pierced the circle of the Picts and the Orkneymen, and heedless of the wood of arrows and spears which fastened in his armour, he even penetrated to the Cumbrians and the Scots. He beheld Constantine, the king of the Grampian Hills, and he pressed forward to assail him. Constantine was too brave to decline his daring adversary. The assault fell first upon his son, who was unhorsed, and with renovated fury, the battle then began to rage. Every heart beat vehemently; every arm was impatient to rescue or to take the prince. The Scots with noble loyalty, precipitated themselves on the Saxons to preserve their leader. Turketul would not forego the expected prize. Such, however, was the fury of his assailants; so many weapons surrounded the Saxon chancellor, that his life began to be endangered, and he repented of his daring. He was nearly oppressed; the prince was just released, when Singin, with a desperate blow, terminated the contested life. New courage rushed into the bosoms of the Saxons on this event. Grief and panic as suddenly overwhelmed their enemies. The Scots in consternation withdrew, and Turketul triumphed in his hard earned victory.

Athelstan and his brother Edmund, during these events, were engaged with Anlaf. In the hottest of the conflict, the sword of Athelstan broke at the handle, while his enemies were pressing fiercely upon him. He was speedily supplied with another, and the conflict continued to be balanced. After the battle had long raged, Egils and Turketul, pursuing the retreating Scots, charged suddenly upon Anlaf's rear. It was then that his determined bands began to be shaken; slaughter thinned their ranks; many fled, and the assailants cried out victory! Athelstan exhorted his men to profit by the auspicious moment. He commanded his banner to be carried into the midst of the enemy. He made a deep impression on their front, and a general ruin followed. The soldiers of Anlaf fled on every side, and the death of pursuit filled the plain with their bodies.

Thus terminated this dangerous and important conflict. Its successful issue raised Athelstan to a most venerated dignity in the eyes of Europe. The kings of the continent sought his friendship, and England began to assume a majestic port among the nations of the West. Among the Anglo-

Saxons, the victory excited such rejoicings, that not only did their poets aspire to commemorate it, but their songs were so popular that the following is inserted in the Saxon Chronicle as the best memorial or record of the event."*

Here Athelstan, king;
Of Earls, the Lord;
To heroes the bracelet-giver,
And his brother also,
Edmund Atheling,
Elder of ancient race,
They won a lasting glory,
With the edges of their swords,
By slaughter in battle,
Near Brunanburh.
The followers of Edward
Their board-walls clove.
With the wrecks of hammers
They hewed the noble banners.
To them it was natural
From their ancestry,
That they in the field
Against every foe,
Their lands should defend,
Their hoards and homes.
Pursuing, they destroyed
The Scottish people
And the ship-fleet.
The dead fell;—
The field resounded;—
The warrior sweat.
Since the sun was up
In morning hour—
Gigantic creature—
Glad above the earth:—
God's candle bright—
The eternal Lord's—
Till the noble creature
Set in the western main.
There lay soldiers many,
With darts struck down.
Northern men there were
Over their shields shot.
And Scotland's boast,
A Scythian race
The mighty seed of Mars.
With chosen troops
Throughout the day
The fierce West-Saxons
Pressed on the hated bands:—
Hewed down the fugitives—
Scattered the rear—
With strong mill-sharpened blades.
The Mercians too,
Did not refuse,
The hard-hand play,
With those that Anlaf brought:
Over the raging sea,
In the bosom of his ships,
Who sought this land
For deadly fight.

Five kings lay
On that battle field:
In bloom of youth
Pierced through with swords.
So also seven
Of Anlaf's Earls;
And of ships' crews
Unnumbered crowds.
The little band
Of hardy Scots
Was there dispersed.
There was made flee
The Northmen's chieftain.
By need constrained
He sought the prow,
Urged to the noisy deep,
And so his life preserved.
So too Constantine,
The valiant chief,
In hasty flight
His country sought.
The hoary warrior
Cared not to boast
Among his kindred
Of the blending swords.
Here was his kindred band
Of friends o'erthrown:—
On the folk-stead
In battle slain.
And his son he left
On the slaughter-field,
Mangled with wounds
And young in fight.
The fair-haired youth;—
He would not boast
Of the slaughtering strife;
Nor would the old deceiver.
No more could Anlaf,
With the remnants of their armies
Boast and say,
That they on the field
Of stern command,
Better workmen were;
In the conflict of banners;—
In the clash of spears:—
In the meeting of heroes;
In the rustling of weapons,
When they on the field
Of slaughter played
With the followers of Edward.
The Northmen sailed
In their nailed barks.
A dreary remnant
On the raging ocean:
O'er the deep water
Dublin to seek,

* Turner's *Anglo-Saxons*, vol. ii. pp. 181—185.

And Ireland's shores
Disgraced in mind.
So then the brothers,
King and Atheling,
Their country sought:—
West-Saxon land:—
In fight triumphant.
They left behind them
The corse to devour;
The sallow kite—
The swarthy raven
With horned beak—
And the hoarse vulture—
With the eagle swift
To consume the prey.
The greedy war-hawk too,
And that grey beast
The wolf which haunts the wood.

No slaughter yet
Was greater made,
In this our land
Of people slain;
Before this time
By edge of sword:
As books declare
Of writers old:—
Since hither first
From eastern shores,
Angle and Saxon came,
Over the broad sea
And Britain sought.
These mighty smiths of war
O'ercame the Welsh;
Most valiant Earls were they
And gained the land.*

In addition to the preceding, it may be observed that the praises of Athelstan formed the theme of many an ancient poem. Henry of Huntingdon characterises some of these as mere bombast, but William of Malmsbury, although mostly agreeing with him in opinion, has preserved a portion of two which appear to claim a higher designation. In the first of these, his childhood and accession are related in laudatory, but not extravagant terms; and in the other, his victory over Anlaf is celebrated in a strain not unbecoming so noble an achievement. Some little reserve may be necessary when it is stated that Athelstan's forces mustered

"A hundred thousand strong;"—

nor can it be doubted that the poet has exercised his licence freely when he avers that—

"Anlaf, only, out of all the crew
Escaped the meed of death so justly due."†

The prayer of Athelstan before the battle, is perhaps nothing better than an invention of our old historians: it however exists both in the original Saxon, and in a Latin version, which is probably contemporary with the prose narratives of some of the earlier annalists. Sharon Turner gives a few of the opening sentences only in his valuable history, from which I have so largely quoted, but through the kindness of Dr. Hume I am enabled to present a version of the whole, accompanied by another poetical fragment relating to the crowning effort of the Saxon King.

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* Turner's *Anglo-Saxons*, vol. iii. pp. 274—276. Ingram's *Saxon Chronicle*, pp. 141—145. Giles's *Saxon Chronicle*, pp. 375—377.

† William of Malmsbury, p. 137. (Bohn.)

SONG, ON ATHELSTAN'S VICTORY OVER THE DANES AT BRUNANBURH.

[From MS. Cotton. Nero A. II., fol. 8, v°. Written in a bold Saxon hand, contemporary or nearly so with the event. (A. D. 938.) The song, or fragment, appears to have been taken down from recitation, by an ignorant scribe, and is hopelessly corrupt.] Printed by Mr. Thomas Wright, in the *Reliquiæ Antiquæ*, vol. ii. p. 179, (1845.)

Carta dirige gressus
per maris et navium
tellarisque spatum
ad reges palatum.

Regem primum salute
reginem et clitanum
clarus quoque commitis
militis armieros.

Quorum regem cum Æthelstanum
ista per fecta Saxonia
vivit rex Æthelstanum
per fecta gloriosa.

Ille Sictric defuntum
armatum in prelia
Saxonum exercitum
per lotum Bryttanium.

Constantinus rex Scottorum
et velum Bryttannium
salvando regis Saxonum
fideles servitia.

Dixit rex Æthelstanus
per Petri preconia
sint sani sint longe
in Salvatoris gratia.

PRAYER BEFORE THE BATTLE.

(FROM THE SAME MS.)

Domine Deus omnipotens, rex regum et dominus dominantium, in cujus manu omnis victoria consistit, et omne bellum conteritur, concede mihi ut tua manus cor meum corroboret, ut in virtute tua in manibus viribusque meis bene pugnare viriliterque agere valeam, ut inimici mei in conspectu meo cadent et corruant, sicut corruit Golias ante faciem pueri tui David, et sicut populus Pharaonis coram Moysi in Mare Rubro, et sicut Philistim coram populo Israel ceciderunt, et Amalech coram Moysi et Chananei coram Jesu corruerunt, sic cadant ininici mei sub pedibus meis, et per viam unam conveniant adversum me, et per septem fugiant a me, et conteret Deus arma eorum, et confringet framea eorum, et eliquisce in conspectu meo sicut cera a facie ignis, ut sciant omnes populi terre quia invocatum nomen, Domini nostri Jhesu super me, et magnificetur nomen tuum Domine, in adversariis meis Domine Deus Israel.

Section II.—The Locality.

Such was the Battle of Brunanburh, and such its consequences to the Danes in Lancashire. It was still called *great* at the time when Ethelward wrote his chronicle for the instruction of Matilda, and although all our historians have borne testimony to its magnitude and importance, they have invariably remained silent as to the *locality* of the conflict.

The *Saxon Chronicle* states that the battle was fought *near* Brunanburh; Ethelward calls the place Brunandune; Simeon of Durham gives Wendune as the locality; Malmsbury and Ingulf name it Brunsford, or Brunford; Florence of Worcester agrees with the *Saxon Chronicle;* Henry of Huntingdon gives Brunesburh; and Geffrei Gaimar has the variations Brunswerce, Burnewest, and Brunewerche. In the *Annales Cambriæ* it is styled "Bellum Brune," or the Battles of the Brun; and the same designation is found in the *Bruty Tywysogion*, or the Chronicle of the Princes of Wales. All these, no doubt, imply the same locality, but no distinctive place is

assigned by any of these authorities. William of Malmsbury says that the field is situated "far into England," and consequently must not necessarily be sought near the seashore, as some inquirers have recently suggested. Camden in his *Britannia* gives Brumford, near Brumridge, in Northumberland, as the place where "King Athelstan fought a pitched battle against Anlaf the Dane;" but Gibson suggests that it "must have been somewhere nearer the Humber;" although he finds a difficulty in carrying Constantine "and the little King of Cumberland so high into Yorkshire." More recently we find Bromborough in Cheshire, Banbury in Oxfordshire, Burnham and Bourne in Lincolnshire, Brunton in Northumberland, Brownedge in Lancashire, &c., suggested as probable sites; but so far as I am aware little else than unsupported conjectures are offered as reasons why we should prefer one of these localities to another, in our selection of that most entitled to credit.

Dr. Giles, and others, merely vitiate the text of the *Saxon Chronicle* by writing the name Brumby instead of Brunanburh. Ingram in his map of Saxon England places the site in Lincolnshire, near the Trent, but without assigning any sufficient reasons; nor have other writers been much more careful. Turner merely observes that "the *Villare* mentions a Brunton in Northumberland," and Gibson states, what may still be seen in maps of a century old, "that in Cheshire there is a place called Brunburh," near the shores of the Mersey. The Lincolnshire localities do not appear to possess any better claims than similarity of sound in the initial syllable, and the same may be said of Brunton, Brownedge, and others. Brinkburn, in that county, is called Brincaburh by John of Hexham in A.D. 1154, and on such slight grounds the authors of the *Beauties of England and Wales* conjecture that "this is the true situation of Brunanburh!" (Vol. xii p. 190.) Some appearances of a fortification on the hill adjoining certainly lend a colour to this presumption; and similar slight indications of an encampment near Brumridge may have led Camden to decide in favour of this locality; but in the present state of our knowledge of these and kindred subjects we are entitled to demand something more than what these authors have produced, before we can admit that their conjectures are worthy of more than a passing consideration. The pages of a gazetteer, or the names on a map, may assist in detecting orthographical variations and coincidences; but they do not enable us to

prove, or pronounce, an identity, unless when supported by other and more positive evidence.

I therefore now propose to substitute the name of BURNLEY IN LANCASHIRE *for any or all of these, and I hope in the course of this essay to render it extremely probable that the* BATTLE OF BRUNANBURH *was fought in its vicinity.*

The town of Burnley must have been considered of some importance even in Saxon times, for there is every reason for believing that Paulinus himself preached the gospel in the neighbourhood, and baptized his converts in the River Brun. A Saxon Cross still exists in Godly Lane, near St. Peter's Church,* of a similar character and workmanship to those at Whalley and Dewsbury, which are generally admitted to attest the presence of the "Apostle of the North"; whilst *Bishop Leap* and *Bishop House* in the immediate vicinity of the cross, may be adduced as additional evidences of the archbishop's visit. Lying as the town does upon one of the Roman roads between Rigodunum (*Ribchester*) and Cambodunum (*Slack*), and being itself a station, there could be little difficulty in the way of his arrival in this locality, although later travellers may have found the country wild and inhospitable. Local tradition also asserts that the church was intended to be erected on the site now occupied by the cross; but that whatever the workmen built during the day, was removed during the following night, by supernatural means, to the place where it was subsequently erected. Burnley would therefore be well known to the Saxons;—the nomenclature of the district attests their long occupation of the country;—its church would probably be one of the first to be erected after the conversion of the inhabitants to Christianity, and a *burh* for its protection would no doubt be erected on the steep cliffs of the Brun, by which the church is overlooked on the west.

But the proofs of Danish possession are not the less remarkable and conclusive. Almost every local name which is not Saxon, is either Danish or Norwegian in its origin. We have *Danes* House to the north of the town, and Saxifield, or Saxonfield *Dyke*, which is mentioned in a charter of the reign of King John, on the edge of a broad and easy slope within a short distance. New-*Kirks* are found both in Pendle Forest and in Rossendale; *Thorpe* occurs near Bacup; *Laiths* abound in all directions,

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* See my *History of the Parochial Church of Burnley*, p. 10.

as Hey *Laith*, Moor *Laith*, &c.; *By* is found in Earby near Colne; *Holme* and *Longholme* are not far distant; Pin*how* and *Kell*brook are again not far from Colne. Shel*feld*, Longridge *Fell*, Riddy-*halgh*, Musty-*halgh*, *Haulgh*-head, Brun*shaw*, Wal*shaw*, Hag*gate*, Narrow*gate*, *Laund*-booth, *Scarth Rake*, and a multitude of others might be pointed out as decidedly Danish names of places; whilst *Winwall*, *(the place of contention)*, near Emmot Moor, and the *Old Dyke*, indicate intrenchments which have now almost wholly disappeared during the progress of cultivation; but taken together with *Warcock* Hill in the same neighbourhood, may carry us back in imagination to those dreaded banners, blazoned with the Danish *raven*, which floated aloft during the conflicts we have undertaken to illustrate. *Toft* and *Garth* occur in deeds without date; *Beck*, *Biggin*, and *Tarn*, are still heard daily in common conversation; nor would it be difficult to add considerably to the lengthiest of the published lists of these certain indications of Danish occupation.

Again, it is not at all improbable that Athelstan himself visited the neighbourhood of Burnley. Baines in his *History of Lancashire*, vol. iv. p. 371, asserts, on the authority of the *Mundana Mutabilia*, *Harl. MSS.* 1727, *fo.* 336, that a deed exists in the Saxon tongue, granting the lands of Elston, or Ethelston, to Ethelston of Amounderness at the time when he was "lying in camp in this country upon occasion of war"; and in A.D. 926, both the *Saxon Chronicle* and Florence of Worcester bear testimony to his confirming a treaty of peace between the Welsh, Scots, and Northumbrians, whom he had subdued, "at a place called Eamot, on the fourth before the ides of July." He also expelled Guthfrith from Northumbria in A.D. 927. Where Eamot was situated the chroniclers do not say, but its derivation from Ea=water, and Munt=mouth, indicates the mouth of the water, and *Emot*, a hamlet and a large estate in the Forest of Trawden, near Colne, both answers to the etymological requirements of the name in the Hallown or Saint's Well, which pours forth an abundant stream, and has besides given name to a family whose ancestry is too ancient for genealogists to trace. *(See Whitaker's Whalley, p.* 397.*)* It can therefore scarcely be doubted that this is the place intended, and if so, Athelstan would be well acquainted with the nature of the country. We must consequently inquire whether the *military* defences of this portion of the English Appenines were such at that period as to warrant his presence in these districts when engaged in warfare against Anlaf and the Danes.

The existence of a line of fortifications between Colunio (*Colne*) and Mancunium (*Manchester*) on the lower range of hills which divides Lancashire from Yorkshire, has been known to antiquaries ever since Dr. Whitaker completed his *History of Whalley* in 1818. He supposed the line to extend from Colunio to Cambodunum, but this I conceive is a mistake; for neither the locality nor the Ordnance maps give indications of any fortifications farther *east* than those on Twist Hill; whilst on the other hand they represent the line as continuous in the direction of Manchester, from Colne, by Littleborough and Rochdale. Several of these intrenchments were unknown to the historian of Whalley; but a recent examination of the principal portion of these interesting remains, (October 25th, 1856,) in company with my friend Benjamin Chaffer, Esq., has enabled me to enter more fully into their peculiarities and situation. For the sake of clearness I shall take them in order from northeast to southwest, in accordance with the numbers on the accompanying sketch-map of the district.

1. Castercliff is a formidable looking fortification, at a short distance from Colne, in a portion of what was once the Forest of Mereclesden (*Marsden*), and is supposed to have been the *castra æstiva* of Colunio. Many Roman coins have been found in the valley below, and it is situated on the Roman road between Colunio and Cambodunum, and at the junction of this with the vicinal way from Rigodunum (*Ribchester*) to Alicana (*Ilkley*). The intrenchments form a parallelogram measuring about 550 feet long by 520 feet broad; but the walls appear to have enclosed an area of about 380 feet in length by 340 in breadth. The camp has been protected on the southwest front by a deep gully and also by a double vallum and foss, which are still entire about the whole crest of the mound. We were informed that many hundreds of tons of stones have been carted away from the walls within the last thirty or forty years, all of which appeared to have been subjected to intense heat. Large quantities still remain half buried in the soil, many of them completely vitrified, and others presenting a singularly mottled appearance from having been only burnt half through. The burnt sandstone and lime form excellent manure, and at the time of our visit a luxuriant crop of corn and cabbages had just been gathered from the broad ditches of this Roman camp. A less elevated plateau of considerable extent bounds the northeastern slope, which is again protected

TO GEETLE
TO ILKLEY
COLNE
WINEWALL
EMMOT
TO HALIFAX
BARROWFORD
RIVER CALDER
C.1 Castor Cliff
Castle Hill
C.2 SWELFELD
Ring Stones
C.3
TRAWDEN FOREST
To Portfield
Roman Road
PENDLE FOREST
SCHOFIELD
Roman Road
BOULSWORTH
CAMP
ROAD BANK
HAGGATE
WARLOCK HILL
THURSDEN WATER
RIVER BRUN
To B.6
C.5
C.6
C.7
CAMP
DELF HILL
FORD
RIVER BRUN
TO SLACK
YORKSHIRE
BURNLEY
B.C. To
Ring
WORSTHORNE
HAMILDON
RIVER CALDER
9.C.
Red Lees
ORMEROD
Hurstwood
10.C.
High Leas
TOWNELEY
RIVER BRUN
SHEDDON EDGE
Blackmoor
LONG CAUSEWAY
ROMAN ROAD
COPY NOOK
HOLME
C.11
EARBY
STIPERDEN
TO SLACK
THEIVLEY
BIRPLEY
WHITEWELL
CROSSENDALE
BROADCLOUGH
E.12
TODMORDEN
RAWTENSTALL
BACUP
NEWCHURCH
Scale of Miles.

by a steep cliff sloping down to the Calder, near Waterside. This would afford a convenient space for the exercise of large bodies of troops, or for the protection of the cattle belonging to the garrison; and it has probably been used for such purposes by the successive masters of the fortification. Being almost inaccessible on all sides except the east, where they are skirted by the Roman road, these defences, when complete, must have constituted one of the strongholds of the North, since they overlook the whole of the Forest of Trawden, Emmot Moor, a great portion of Craven, with the valley of the Calder, and terminate the eastern limit of the ridge on which Saxifield is situated. Castercliff has evidently been the *key* of this portion of Lancashire in the hands of the Romans, and its importance would undoubtedly not be overlooked by the Saxons and the Danes *

2. Crossing Gib Clough, and passing along the Roman road, portions of which still remain entire, a distance of less than a mile brings us to Shelfield, on the summit of which the late R. T. Walton, Esq., erected a tall granite cross. This erection probably stands in the centre of a large *circular* encampment, of which some portions of the ditch are indicated by the undulations of the surface, and by a swampy part of the ground on the western slope.

3. Ring Stones Hill, at a short distance, formerly contained a large circle of stones, erected either for purposes of burial, worship, or defence; but they were dug up a few years ago, and have since been used for repairing the roads.

4. After crossing Float Bridge *Beck*, and Catlow Brook, we next arrive at Broad Bank, near *Ridihalgh*, on the summit of which are the remains of a *circular* intrenchment, measuring about 150 feet in diameter. There is no appearance of walls, but both the vallum and foss are perfect throughout the whole circumference. This station occupies a very commanding position, overlooking the whole of the Valley of Thursden, with the heights of Boulsworth in the distance, but it does not appear to have been of a permanent character.

5. Passing through Thursden Valley, to a corresponding crest on the opposite ridge called Bonfire Hill, at the distance of about a mile, we find another *circular* intrenchment, 130 feet in diameter, and very similar

* In the map, C indicates a camp, B a beacon, T a tumulus, and F an entrenchment.

in character to the last. This encampment is surrounded by an earthwork rampart, which is still comparatively perfect on three of its sides, and easily traceable on the fourth. The rampart measures 700 feet in length by 450 in average breadth; thus constituting a most formidable post in an almost inaccessible position to an attacking force. At a short distance, on what is now called Delf Hill, there is a *circular* tumulus of loose stones, about forty feet in diameter, and two feet in average height. Both the station and the tumulus occur on heights which overlook the Valley of *Swinden*; the slopes of Briercliffe lie to the northwest, and Burnley is visible in the distance.

6. Pikelaw, on the same ridge, has much the appearance of a large tumulus; but, as its name indicates, it has long been used for the purposes of a beacon. There are two circular tumuli on Beadle Hill, within a short distance, but they have almost disappeared in course of cultivation. They have been composed as usual of loose stones mixed with earth, and have not measured more than thirty feet in diameter when perfect.

7. From this point the line diverges a little to the west, and on arriving at Twist Hill, which overlooks Holden Clough, Rogerham, and *Swinden* Valley, we find the remains of a *square* camp, which has long been known as Twist Castle. How it came to have this designation is by no means clear. Dr. Whitaker supposes the name to have reference to the ancient forests which once covered the district, and to indicate the "*boundary of oaks.*" Should this conjecture prove correct, the castle will probably have given name to the township of Ex*twistle*, in which it is situated. Each side of the encampment measures about 150 feet in length, within the trenches; the remains of the foss and vallum are very distinct; the latter being elevated considerably above the surface of the moor; and spaces still remain for the Pretorian and Decuman gates. A smaller enclosure occurs at the southeast corner, measuring about sixty feet square; and at a short distance is a *circular* tumulus of loose stones, about 45 feet in diameter. A few years ago this was elevated five or six feet above the surface, but its height has been much diminished in consequence of the stones having been carted away to form the road to the new quarry near Monk Hall. No remains were found in the tumulus during the excavations, but this may perhaps be accounted for from the fact that as yet the *top* only has been removed. Twist Castle occupies a commanding position on the western

slopes, and taken together with the next in order, must have presented formidable difficulties to an attacking force.

8. Leaving Twist Castle, and crossing Swinden Valley a little to the west, we arrive at Slipper Hill, near Wasnop Edge in Worsthorn. There are here the remains of Ring Stones Camp, an ancient enclosure much the same in character with the one just described. It is *oblong* in form, measuring about 200 feet in length by 160 feet in breadth, and has a smaller enclosure of about 50 feet square on the northeast side. The foss appears to have been upwards of twenty feet in breadth, and the elevation of the vallum is still considerably above the general surface. On a crest above are the remains of a beacon, and a *circular* tumulus is situated at a short distance, which although now almost obliterated, has originally measured about fifty feet in diameter. The name Ring Stones has probably been derived from the tumulus, or it may be from a circle of stones which has been removed at some former date, or again, from the death of *Hyrngyr* during the night attack. This last conjecture is rendered very probable from a remarkable tradition which is still prevalent in Worsthorn, to the effect—that the Danes constructed these defences—that a great battle was fought on the Moor—and that *five* kings were buried under the mounds.

9. Following the same direction, and crossing the River Brun through Thornden Clough, we next arrive at the Red Lees Intrenchments, which are described by Dr. Whitaker as certain "strange inequalities in the fields," having the appearance of foundations or temporary earthworks. They command the valley of the south branch of the Calder, and also a considerable portion of that of the Brun; their dimensions are such that the progress of agriculture has not yet been able to efface them.

10. The crest at High Law, within a short distance of Red Lees, was formerly crowned with a small fortification and several tumuli, but the greatest portion of these remains were removed so early as 1695. In that year many medals and coins, mostly belonging to Legions I, II, VII, VIII, XV, and XIX, were found here (during the removal of the stones and earthworks,) which were presented to the author of the *Ducatus Leodiensis*, by Charles Towneley, Esq., of Towneley, brother to Richard Towneley, Esq., the mathematician and philosopher. Thoresby describes them as having

been found " near Mere Clough, on the skirts of the wild moors that border upon Yorkshire; where a considerable heap of stones, &c., evidence the ruins of a Roman Fort or Station, as I am informed by Mr. Towneley, who generously sent me above twenty Consular and Imperial coins *that he had procured from the workmen.*" (*Musæum Thoresbyanum, pp.* 7, 8.) I have recently seen a coin belonging to the emperor Probus, which was found at Overtown in the same locality.

11. We now diverge a little to the east, and crossing the entrance of the gorge of Cliviger, we find Easden Fort on the opposite eminence. It is a small *angular* fortification, overlooking the passes to Todmorden and Halifax. The winter torrents have well nigh washed away the cliff on which it is situated, but enough remains for its identification as one of the series. Above Copy Nook plantation, at no great distance, are several oblong tumuli, which are still mostly entire. Tradition states that a battle was fought here, on Oliver Hill, during the Civil Wars, and that these are the graves of the slain; it is however much more probable that these tumuli cover the remains of more ancient warriors than those engaged in the struggles of the Usurpation.

12. Thieveley Pike, an ancient beacon on the crest above, looks down upon the Old Dyke at no great distance on the Rossendale slope, and also commands a full view of Broadclough Dyke, a formidable and gigantic intrenchment near Bacup. It measures more than 1800 feet in length, is situated at the edge of a gentle slope, and has a trench at least 54 feet broad at the bottom. What can have been the object of such an extensive earthwork can of course only be matter for conjecture. From its position, it is capable of protecting a large army in front, but it is easily accessible from the east, and must have been abandoned by its defenders whenever the enemy had turned their flank. Its construction can only have been suggested by temporary necessities, since it has evidently been abandoned in an unfinished state. The forest of Rossendale in the times of the Saxons and the Danes, would have a real existence, and its sturdy oaks, of which the remains are still dug up in every field, might recall to mind the wood near which Adalis made the night attack, and where Hyryngr and the Bishop of Sherborne fell, had not Worsthorn Moor a better claim to be considered as the theatre of these events. Dr. Whitaker conjectures that the name is derived from Wrdeston, or Wrtheston, the town or place of

Wrthe, "a genuine Saxon name, probably of the first proprietor," for such is the orthography in a charter of the time of Edward III. But it is not improbable that Worsthorn may after all be *Werstan's* Moor. The death of so high a dignitary of the church would be looked upon as a principal incident of the night attack; the field upon which he fell would naturally be associated with his name; and the tumulus near Ring Stones Camp, as tradition states, may contain the ashes of one or more of the opposiug chiefs.

Such then are the remains of this line of fortifications, within the distance of little more than nine miles. For number and importance, they are probably unequalled in any part of the kingdom. Those at Castercliff, Twist Castle, and Ring Stones Camp, I take to be decidedly Roman in their origin. In the hands of such disciplined forces, they would effectually serve to keep the Brigantes in subjection, and the Sistuntii in security; the stations would be easily accessible to troops from Eboracum and Alicana; from Mancunium and Cambodunum; and from Coccium, Rigodunum, and Ad Alaunum; since they lie upon the vicinal way between Heptonstall and Colne, and upon the *Long Causeway*, which still exists as a high road between Halifax and Burnley, and is known as the "Danes Road" in one part of its course.* After the departure of the Romans, these fortifications would be kept up by the Roman-British troops as a protection against the inroads of the Scots and Picts, and would again of necessity be taken possession of by the Saxons when they undertook to defend the country against their devastating incursions. When the Danes began to contend with the Saxons for the mastery, they would naturally be compelled to attack these strongholds of Northumbria, and the slopes to the east and west of this ridge of hills would form the battle-fields for their possession. To these fierce invaders then, or their opponents, I am disposed to attribute the formation of the *circular* encampments along the line, as well as the *Dykes* at Saxifield, Thieveley, and Broadclough Circular earthworks for the defence of their camps are known to be almost peculiar to the Saxons, the Danes, and their more northern allies; who nearly always chose the tops of hills on which to construct them; and they were always protected by a vallum and a foss.† Their mode of sepulture too corresponds with the general character of the tumuli found on the slopes adjoin-

* Whitaker's *Manchester*, vol. i., p. 132. † Forester's *Henry of Huntington*, p. 158.

ing. Small ones, composed of earth and loose stones, were formerly very abundant, and on Catlow, Extwistle, and Worsthorn Moors, rude earthenware urns are occasionally found a foot or two beneath the *flat* surface, surrounded by a few small stones set upright, and mostly filled with pieces of charcoal and calcined bones. After the destruction of the *burh* at York by Athelstan's forces, as already mentioned, I know of no locality in Northumbria able to compete with this line of defences in a military point of view. From beyond Castercliff to Manchester, each crest can boast of either its *burh* or its *beacon.* The signal fire on Boulsworth, immediately above the principal fortifications, answers to that on Pinhow; Pikelaw to Thieveley; Homildon to Pendle and Portfield; Billinge to Mellor; Cridden to Rochdale, Littleborough and Manchester; and thus whilst each hill top and slope bristled with troops, and sounded the alarm of war, the whole country could readily be roused to arms for the protection of their "hoards and homes." Whoever held these mountain fastnesses, most certainly secured the possession of some of the most populous and fertile districts of Northumbria. Their magnitude and importance in those times of comparatively rude warfare, would neither be unworthy of the presence of Athelstan himself, nor could Anlaf, after the expulsion of Alfgeirr, have chosen a more secure line of defences when providing for the contingencies of the Battles of the Brun.

The *Saxon Chronicle* is entirely silent as to the fitting out of Anlaf's expedition. It substitutes poetry for prose in its description of the battle, and thus has preserved to our times one of the noblest lyrics of the Anglo-Saxon bards. Florence of Worcester calls him "King of Ireland, and many other Isles," and further asserts that he entered the mouth of the Humber with a powerful fleet. Simeon of Durham, describes the naval force as consisting of 615 ships, but says nothing respecting its destination. (See the *Monumenta Historica Britannica*, p. 686.) Later annalists generally agree in supposing that the principal portion of the expedition was fitted out in Dublin; nor do they find any difficulty in bringing it round to the mouth of the Humber. Mr. Wright, in Tallis's *History of England* says, the fleet sailed "round the north of Scotland," but Hume is of opinion that it merely hovered about in the Irish sea. Without doubt, Anlaf would find it expedient to join the naval forces of his northern allies with a powerful division; the estuary of the Humber would form the

most convenient harbour for their debarkation; and hence we may reasonably conclude that Florence and his copyists are correct in the main. But it must also be remembered, that at this period, the coasts of Lancashire and Cheshire had long been in the hands of the Danes; Wirral occasionally presented the appearance of a vast camp; Kirkham was one of their strongholds in Amounderness; the estuaries of the Dee, the Mersey, the Ribble, the Wyre, and the Lune, were familiar to the leaders of these daring mariners; and the "Danes Pad," through the Fylde district, formed one of the principal roads by which they penetrated into the interior of Northumbria and Mercia.

It is therefore, not at all probable, that so skilful a leader as Anlaf would omit to send large detachments into the mouths of the Ribble and the Wyre. These ports lie almost opposite to Dublin, and would be much more easily accessible than the Humber; the troops would be necessary in order to effect a junction with the Cumbrians and the Welsh; whilst the ships there stationed would afford the best means of passing

"O'er the deep water
Dublin to seek,"

in case of defeat. The confederate forces would then effect a junction with Anlaf by passing along the Roman roads which intersected the district, after he had penetrated "*far into England*," and I venture to presume that the whole of his army was ultimately concentrated in the neighbourhood of the line of fortifications here described. Athelstan and his forces would take up corresponding positions in the front; the existing Dykes may have been formed as temporary lines of defence; and the great battle was most probably fought on the slopes of Saxifield, or Saxonfield, immediately in advance of the principal encampments. Dr. Whitaker in his *History of Whalley*, has preserved the local tradition which prevails in Burnley and its neighbourhood, of some great engagement "during the Heptarchy" at Saxifield, but he did not consult the older historians for any confirmation of its truth. The frequent discovery of bones, some of them apparently human, still serves to keep alive the popular story, and pass it down to each succeeding generation. Such remains were lately met with in large quantities when digging the cellar at Lower Saxifield House; and not long ago a large number of small tumuli, popularly termed "the graves," were levelled by the farmers for purposes of cultivation. Iron arrow-heads are sometimes found in the

mosses, and in 1802, a massive gold ring, weighing 1½ ounces, was found near Holme.* But the most important discovery remains to be noticed. In 1840, upwards of 9,000 coins, a number of bars of silver, armlets, broken rings, &c., were found enclosed in a leaden chest near the track of the Roman road from Coccium *(Walton)* to Cambodunum; which is now well known to numismatists as the "Cuerdale Find." The coins were all minted between A. D. 815 and A. D. 930, and consequently "the treasure must have been buried during the first half of the tenth century."† Some of these coins were Arabic or Kufic; about 1000 were French; others were minted in North Italy; 2,800 belonged to the Anglo-Saxon Kings, of which 860 were of the reign of Alfred; 3,000 were of a peculiar character, bearing the inscriptions Siefredus Rex, Sievert Rex, Cnut Rex, Alfden Rex, and Sitric Comes. All these are the names of "mighty Scandinavian chiefs, who in the ninth and tenth centuries, ravaged the western lands," but Cnut's were the most numerous, numbering in all about 2000 pieces. The Sitric, here mentioned, fell in battle in England about A. D. 900; Alfden perished at Wednesfield, in A. D. 910; Sigfrid ravaged the English coasts in A. D. 897; and Cnut was a son of the first Danish monarch, who is said to have fallen in battle somewhere on the coasts of Britain. It has been remarked that no similar coins have been found anywhere else in England, except a few of Cnut's at Harkirke, near Crosby, in Lancashire; and hence the conjecture seems reasonable, that the "Cuerdale Find" formed a portion of Anlaf's treasure, which his followers abandoned and buried during their hasty retreat to the ships stationed in the estuaries of the Ribble, the Mersey, and the Wyre. *Dane's House* may possibly have formed Anlaf's head-quarters, either before the battle or after his defeat, and hence its name; for the "ship-fleet" destroyed by Athelstan's forces, as stated in the *Saxon Chronicle*, would probably be those left at the mouth of the Humber; since, he is represented by some historians as passing through Beverley on his return from the field of battle; or it may have been at the mouth of the Wyre, where human bones have been found, and where local traditions place the scene of a conflict with the Danes at the prows of their vessels.

But the evidence in favor of Burnley is not yet exhausted, for the *name* itself must not be overlooked in estimating the probabilities. The

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* *See Appendix.* † Worsaæ's *Danes in England*, p. 49.

river *Brun*, as we have seen, traverses the locality where tradition says the battle took place, and it has given its designation to Burnley from a period beyond the reach of history. In some old charters, the name of the town is spoken of as *Brumley*; others give it as *Brunley*; and so it continued to be named until about the middle of the last century. William of Malmsbury, and Ingulf of Croyland, speak of the conflict as the battle of *Brunford;* and the *ford* across the Brun, near Burnley, which lies at the foot of the long declivity on which Saxifield is situated, had given the name of Heysand*ford* to the property of Sir Oliver de Stansfeud, in the reign of Edward the First. Geffrei Gaimar gives the variation *Burnwest*, which is almost preserved entire in *Burnwains*, the name of a farm in the neighbourhood; and the Wendune, or *Wendun*, as Thorpe writes it, of Simeon of Durham, is well-nigh identical in sound with *Swinden*, which we have seen is the name of a valley, and also of a mountain stream of some considerable magnitude which intersects the line of fortifications.

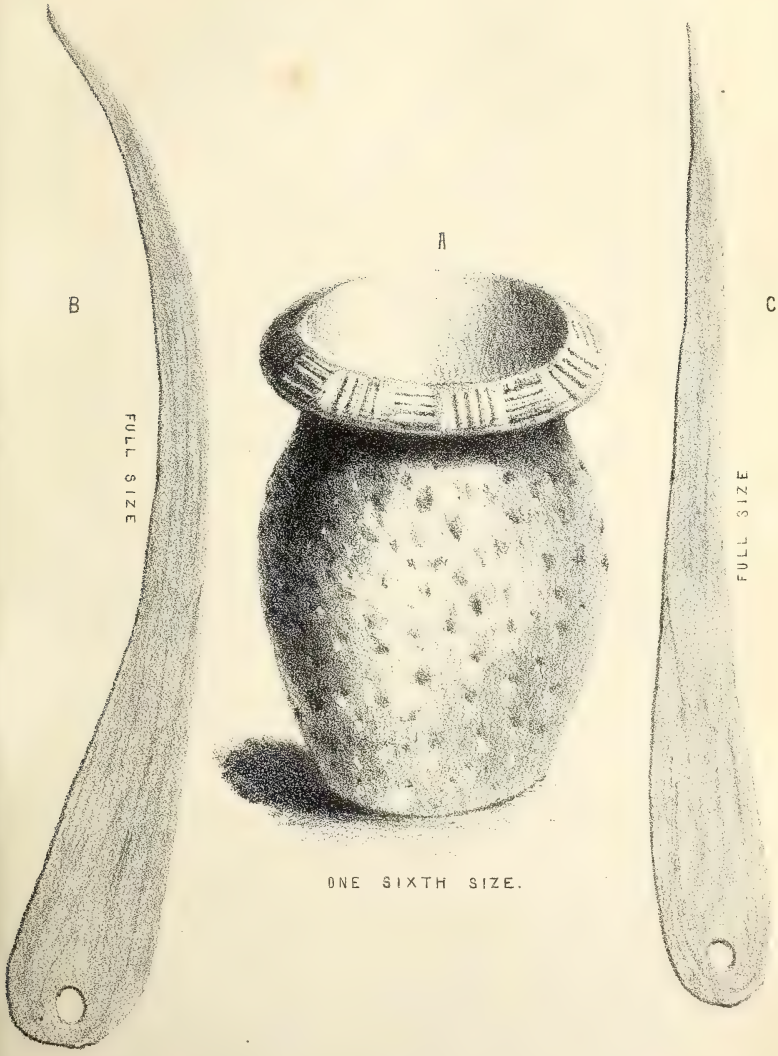
The transition from Brunford to Brumley, Brunley, Brunanley, and Brunanburh, appears to me so natural and consistent as to place it beyond reasonable doubt, that they can only indicate the same locality; and taking this similarity of name in connection with all that has been previously advanced, I am of opinion that the claims of Burnley have been fully sustained, and that it may now be considered as very nearly a *certainty* that the slopes of Saxonfield witnessed the crowning incidents of the memorable Battles of the Brun.

APPENDIX.

On Some Funereal Urns found at Catlow, &c., &c.

The remains of antiquity are not uncommon in this district, for in addition to the Roman Coins found at Castercliff, it may be mentioned that others have been met with at Emmot, Wheatly Lane, and Mereclough. A tumulus which was opened near Law House, Cliviger, in 1763, is said to have contained a kistvaen and a skeleton; another in the vicinity contained a rude earthenware urn, partially filled with calcined bones. In 1766, a glass vessel was found at Overtown, near Towneley, filled with brasses of Constantine and Licinius; and in 1773, two enamelled fibulæ of copper were found on the moor above Holme. Some years ago, Mr. Spencer, of Halifax, opened a portion of the tumulus on Twist Hill, when an earthenware urn was found of a similar character to that found near Law House. Mr. Richard Shaw, about the same time, discovered a portion

of what he conceived to be the neck of a jug, when excavating one of the small tumuli on Worsthorn Moor, but he has unfortunately lost the specimen. The most interesting discovery, however, was made at Catlow stone-quarry in March, 1854, when two or three earthenware urns were met with a little below the surface, when clearing for the flag-stone rock. The urns when perfect, measured about 14 inches in depth, and 9 inches in diameter at the mouth, with a considerable swelling at the centre, as represented in Fig. A of the accompanying plate. They are formed of very coarse earthenware, unglazed, and are very slightly baked. The outer and inner surfaces are of a brown colour, and are considerably harder than the inner substance of the pottery, which appears of a much darker hue, as if it had been saturated with some liquid. The clay has apparently been mixed with straw, small portions of quartz, and rough sand; and is on the whole not very dissimilar to the coarse red earthenware still manufactured at Causeway Side, in Cliviger. This pottery has existed from a very remote period, and the character of the workmanship, *even now*, affords sufficient proof that rude material and construction are not always indicative of extreme antiquity. In general appearance, all these urns are not unlike that found in the Isle of Wight, which is figured, No. 28, Plate xiv, in Akerman's *Archæological Index*, as Anglo-Saxon, but is described, page 132, with a doubt as to whether it does not in reality belong to the Celtic period. The urns contained large quantities of calcined bones, pieces of charcoal, and soft dark earth. Most of the bones are supposed to be human, but are mixed with others belonging to the horse, and some of the lesser animals. A rude piece of flint was found amongst the bones, but from its decayed state, it is not easy to determine whether it has been an arrow-head, or a small celt. Two ivory bodkins were also found at the same time, which are represented of the full size in Figures B and C; they are exceedingly friable, either from age or from having been subjected to the action of fire before being deposited in the urns. The ornamental work on the outside of the urns found both at Catlow and at Extwistle, is precisely similar, and has been formed by very rude means; all the streaks and punctures are coarse and irregular, nor do they appear to have been formed by any instrument less primitive than the point of a stick. The urns, when found, were very much broken by the workmen, who were more intent upon finding treasure than careful to preserve these memorials of antiquity. That most perfect is in the possession of Captain Sagar, of Southfield, and the other has been presented by him to the museum of the Burnley Church of England Literary Institution, and is at present under the care of George Smirthwaite, Esq., Surgeon, who has kindly permitted me the free use of his collection in illustration of this account. Mr. Mayer, of Liverpool, considers these urns to belong to the British period, and there can scarcely exist any doubt as to the correctness of his opinion.


A
B
C
FULL SIZE
FULL SIZE
ONE SIXTH SIZE.

NOTES ON THE YAK, OR GRUNTING OX, AND OTHER RUMINATING ANIMALS FROM CENTRAL ASIA.

*By Thomas J. Moore, Esq., with additional Notes by Captain Smyth.**

(Read 18th December, 1856.)

In the month of March last, a communication on behalf of Captain Edmund Smyth, of the 13th Bengal Native Infantry, was made to the Library and Museum Committee in this town, stating that Captain Smyth, then absent on the Turkish Contingent, was desirous of presenting to the British Museum, and the Museums of Edinburgh and Liverpool, skins of the Yak and other Ruminating Animals recently shot by him in the Himalayas. The offer was most willingly accepted. The specimens, on arrival, proved to be a remarkably fine wild Bull-Yak, a male and female Argali Sheep, the former about four years old; an adult and a yearling Burrhell Sheep, and a Jemlah Goat. The Yak and the adult Burrhell, being all that room could be made for, were immediately stuffed and exhibited.

As all four species are extremely rare in collections, and are very remarkable animals, I have thought that a few notes respecting them might be of sufficient interest to bring before the notice of the meeting.

I shall refer to them in the order in which they occur in the invaluable manual of this Order of Mammalia, forming part of the series of Catalogues of the Zoological collection in the British Museum, the volume on Ungulata Furcipeda, by Dr. Gray, to which I have been much indebted in compiling the following pages, while it is to Dr. Gray's suggestion, I believe, that we are originally indebted for this most valuable donation.

The Yak or Grunting Ox of Tartary and Thibet.

Poëphagus grunniens, (Linnæus).

The Oxen are divided by Dr. Gray, in the work already referred to, into two groups, each having distinctive characters and habits. The first con-

* Since the following paper was read before the Society, Capt. Smyth has returned to England, and on visiting the Museum, he very kindly promised to favour me with his notes on these animals. These notes, extracted from his journal written on the spot, will be read with extreme interest, and I beg to express my best acknowledgements to Capt. Smyth for permission to add them to my paper, in which they supersede much that I had written on the subject.

tains the True Oxen, or those living on the plains of warm and temperate regions; and the second, the Oxen of the mountains or snowy regions. This latter contains the Yak, the Takin (*Budorcas taxicola*, Hodgson, a very remarkable Ruminant from the eastern Himalayas,) and the Musk Ox of the Arctic regions.

The Yak was placed by Linnæus, with all other Oxen known to him, in his single genus *Bos*, as *B. grunniens*. From this it was removed by Col. Hamilton Smith, in 1827, and placed in his genus *Bison*, (as *Bison Poëphagus*,) together with the Gayal of India, the Aurochs of Europe, and the Bison of America. From these it was further separated by Dr. Gray, in the Catalogue of the Mammalia in the British Museum, published in 1843, and formed into a distinct genus as *Poëphagus grunniens*.

The Yak is one of the very few animals existing both in a wild and domesticated state; and as the former is very little known, a brief description of our specimen may be desirable.

DIMENSIONS.

	Ft.	In.
Length of skull (stuffed) from the nose to the occipital ridge	1	10
Width between the orbits	1	0
Width between the horns at base	0	8
Length of each horn measured along the curve	2	2½
Width between the tips	1	2
Length of ears	0	5
Length from the nose to the root of the tail	9	4
Do. to the extremity of the tail	12	4
Height at withers	4	6
Do. at rump	4	4
Girth behind the shoulders	7	3
Length of tail	3	0
Do. of the bushy portion	2	4
Length of pendulous hair at flanks	1	6
Do. do. of tail	2	0

The general colour of our animal, which is in its summer coat, is a deep and rich hair brown, palest on the withers, where it is slightly freckled with grey, and becoming a darker brown in every direction as it recedes from this. The hair of the forehead is rather long, and dark brown, the hairs tipped with grey, producing a grizzled appearance, which increases

towards the nostrils, while the hair becomes short and close; above the centre of the nostrils is a patch of white, which colour also pervades the lips, and slightly the chin. The muffle, or naked space between the nostrils, is contracted to less than an inch in breadth on the lip. On the ears, cheeks, lower jaws, and upper portion of the throat, the hair is rather long and black; between the horns, and behind the occipital ridge, it is divergent and grizzled. The legs are very dark brown; the forelegs, from the shoulders nearly to the knees, are covered with long black silky waved hair, as is very nearly the whole length of each flank, and a line rising obliquely across the buttocks, where the colour of the long hair changes to a brown hue. This long pendulous hair, which constitutes one of the chief characteristics of the species, attains its greatest length on the groin and tail. The tail at its origin is clothed with short adpressed hair, which rapidly increases in length, and forms a huge black whisk, completely hiding the remainder of the caudal extremity. Along the ridge of the neck is a dark brown streak, reaching nearly to the withers, which are free from any medial line; but the lumbar region is traversed by a pale central streak, which becomes dark brown as it approaches the tail. From the hip a blackish line passes diagonally across the loin; this is composed of slightly longer hair than that on the upper part of the body, the whole of which is short and close. In winter the long hair of the flanks probably extends much higher.

The horns are black, very strong, compact, and roundish, diverging outwards at the base, and slightly forwards, then bending backwards with a bold curve, the tips converging towards each other. The hoofs are solid, compact, and black.

Dr. A. L. Adams, of the Army Medical Staff, has favoured me with the dimensions of a Yak shot by Mr. Peyton, of the 87th regiment, near Yarkund, Chinese Tartary, which was considered so unusually fine an animal as to lead to these dimensions being taken; and they only exceed those of our specimen by $2\frac{1}{2}$ inches in the length of horn, $1\frac{1}{2}$ inch in circumference, and $6\frac{1}{2}$ inches in span, the length of face and width between the orbits, being the same in both. Dr. Adams states that the grey hairs about the nostrils are found only in wild, not in domestic examples.

Being found over a wide extent of territory, the Yak is known by a

variety of names. In Thibet the bull is called *Yak*, and the cow *Dhé*; in the same country *Dhong* is the appellation given to the bull in its wild state; and *Yak-mo* is another name for the cow, but whether wild or tame is not stated. In Hindostan the species is designated *Soora-Goy. Chauri-Gau*, and *Kash-gow* are also applied, the former in Nepaul.

The half breed, with what Mr. Vigne ("Travels in Cachmere") calls the common cow, is stated by him to be called *Bzoh.*

The cross common in the north-west Himalayas between the Yak and the Hill Cow (much resembling the English Cow) is called *Zobo.*

Pennant speaks of two domestic varieties, called by the Mongols respectively *Ghainoûk* and *Sarlyk;* the former he calls the original Thibet race, the latter a degenerate kind. He also speaks of the wild race under the name of *Bucha.*

The exact extent of its range in a wild state is not clearly ascertained. All authors agree in its being found in a thoroughly wild and aboriginal state in Thibet, where it is also domesticated, but owing to the general practice of turning herds of the tame breeds at large to graze on the mountain ranges at will, for several months in the year, there is reason to believe that they have often been mistaken by travellers for the unreclaimed animal. Mr. Hodgson, the late British Resident at Nepal, says that the Yak inhabits all the loftiest plateaux of High Asia, between the Altai and the Himalaya, the Belut Jag and the Peling mountains, and that it is found tame as well as wild, but without defining its limits in the latter state. The northern slopes of the Himalayas, that descend upon the plains of Yarkund, the confines of Chinese Tartary, Pamir, and the upper part of Budukhshun, are inhabited by the wild race, to which must be added the locality of our own specimen, namely, the high mountains to the north of the Milum and Neetee passes from Almorah to Hoondes. The Huzarra ranges and Kunawar are also spoken of, but these require confirmation. Little Thibet is too hot for them *in winter*, Mr. Vigne states, and that in fact the real Yak is not common there, but that those of the half breed are plentiful.

Capt. Broome, quoted by Mr. Blyth, has heard of Yaks being seen wild about Rodok, where they are exceedingly savage and dangerous to travellers in the passes. Mr. Blyth also quotes Timkowski's assertion, that both

wild and tame Yaks are found on the western frontiers of China, and in all Tangout.

The specimen in the East India Museum, agreeing with ours in colour, was obtained in Ladakh by chace, and exhibits the natural or wild state.

Capt. Turner gives a very comprehensive history of the Yak in the "Account of his Embassy to Thibet," which was published in 1780. He writes that these cattle are pastured in the coldest part of Thibet, upon the short herbage peculiar to the tops of mountains and bleak plains. The chain of mountains situated between the latitudes 27° and 28°, which divides Thibet from Bootan, and whose summits are most commonly clothed with snow, is their favourite haunt. In this vicinity the southern glades afford them food and shelter during the severity of winter; in milder seasons the northern aspect is more congenial to their nature, and admits a wider range.

Lieut. Wood, quoted by Mr. Blyth, says—"Other cattle require the provident care of man to subsist them through the winter, but the Yak is left entirely to itself. It frequents the mountain slopes, and their level summits, and wherever the mercury does not rise above zero is a climate for the Yak." Lieut. Wood further observes, that like the Elephant the Yak possesses a wonderful knowledge of what will bear his weight. If travellers are at fault, one of these animals is driven before them, and it is said that he avoids the hidden depths and chasms with admirable sagacity. His footing is sure. Should a fall of snow close a mountain pass to man and horse, a score of Yaks driven a-head answer the purpose of pioneers, and make, as his informant expressed it, a 'king's highway.' In this case, however, the snow must have recently fallen, for when its surface is frozen over, and its depths considerable, no animal can force its way through it.

Dr. Hooker, in his "Himalayan Journals," states that the Yak loves steep places, delighting to scramble among rocks, and to sun its black hide perched on the glacial boulders which strew the Wallanchoon flat, and on these boulders he always sleeps. The great altitude he inhabits appears to exempt him from the attacks of insects, as no large Diptera, bots, or gad-flies are there met with. The specimen of the domestic Yak, however, which reached Knowsley in life, discharged from its nostril, during its voyage, the larva of an insect about the size of a human finger; but this does not in any way disparage Dr. Hooker's state-

ment, as it was doubtless implanted in the animal after leaving its native heights. Though the Yak is indifferent to ice and snow, and changes of temperature, it cannot endure hunger so long as the sheep; and though sure footed, it cannot so well as the sheep pick its way on stony ground. Neither can it bear damp heat, for below 7000 feet liver disease carries it off after a very few years.

The wild race is spoken of by Pennant as exceedingly savage. If in the chace they are not killed on the spot, they grow so furious from the wounds that they will pursue the assailant, and if they overtake him they never desist tossing him on their horns into the air as long as life remains. Even when subjugated they retain their fierce nature, and are particularly irritated at the sight of red or gay colours. Pennant further remarks, that Ælian is the only ancient author who mentions this remarkable quadruped, which he describes as the Poëphagus, an Indian animal larger than a horse, with a most thick tail, and black, composed of hairs finer than the human, highly valued by the Indian ladies for ornamenting their heads. Each hair he describes as two cubits long. It was the most fearful of animals, and very swift. When chased by men or dogs, it found itself nearly overtaken, it would face its pursuers, and hide its hind parts in some bush, and wait for them, imagining that if it could conceal its tail, which was the object they were in search of, it would escape uuhurt. The hunters shot at it with poisoned arrows, and when they had slain the animal, took only the tail and hide, making no use of the flesh.

A very singular female head-dress, figured by Dr. Hooker, is to this day made in Thibet from its hair; and the animal is still shot with poisoned arrows. Dr. Hooker says it is hunted with large dogs; is untameable, and horridly fierce, falling upon you with horns and chest; and if he rasps you with his tongue, it is so rough as to scrape the flesh from the bone.

They rut in winter, and produce young in autumn. The calves are covered with rough black curled hair, like a curled haired dog; and when three months old they obtain the long hair on the body and tail. Dr. Hooker says they are very full of gambols, tearing up and down the steep grassy and rocky slopes. Their flesh is delicious, much richer and more juicy than common veal. The flesh of the old Yak is sliced and dried in the sun, forming jerked meat, which is eaten raw, and owing to the small quantity of fat does not become very rancid, but is palatable

food. When the calf is killed, the mother will yield no milk unless the foot or stuffed skin be given her to lick, which she does with eagerness, expressing her satisfaction by short grunts, exactly like those of a pig. This sound replaces in this species the lowing uttered by ordinary cattle, and from the peculiarity its name of "grunting ox," and its systematic one of "grunniens," are derived. It is, however, only emitted under emotion or uneasiness. The Yaks appear to be unusually attached to their young, for when the cows are driven with the rest of the herd to roam at large, and for a length of time, on the mountains, the calf is retained below as a pledge for the mother returning, in which she never fails.

The domesticated Yaks are used for a variety of purposes. They vary much in colour, ranging from red to black, and are irregularly marked with large patches of white; the hump and tail are often white, and the face and legs sometimes partly so. They cross readily with Zebus, and other cattle; hence, doubtless, the hump frequently spoken of as occurring in some individuals, and which appears to be wholly wanting in the wild kinds, though the spinal processes of the vertebræ are unusually developed, and produce very high withers.

Dr. Hoffmeister, who accompanied Prince Waldemar of Prussia in his travels in Asia, as physician, thus speaks of the varieties used for ploughing and riding. "The Yak-ox used in riding is an infinitely handsomer animal than that kept to the plough; it has a stately hump, a rich silky hanging, nearly reaching the ground, twisted horns, a noble bearing, and an erect head. Those used for ploughing are ugly and short legged, and hold their heads very low; the beautiful long silky hair hanging from below the belly is almost, if not entirely, wanting in them, no less than the bushy tail, which their avaricious owners commonly cut off, as an article of trade." The same writer states that a wooden plough is used, and that one man guides the Yak by the nose while another directs the plough.

"Although our path," the Doctor observes, "appeared, from a distance, to be extremely dangerous, it proved quite sufficiently firm and level for our broad-footed Yak-oxen, noble beasts with the thick silky white fringe under the body, and the bushy tail, both of which sweep the ground; but soon the steepness increased so much that these poor animals began to groan, or rather to grunt, in the most melancholy manner; and this

unearthly music gradually rose to such a violent rattle, that—driven rather by its irksome sound than by the discomfort of our saddleless seats—we dismounted at the end of the first half-hour."

Dr. Hooker intimates that the Lamas, nevertheless, relish this mode of travelling. They find the Yak's shaggy coat warm, and his paces easy; but their Yaks are always led, which does not appear to have been the case with the cavalcade above-mentioned. The Yak is a powerful beast of burden, and from its strength and hardiness accomplishes, at a slow pace, twenty miles a day, having either two bags of salt or rice, or four to six planks of pine wood, slung in pairs along either flank. Among the Wallanchoons, their ears are generally pierced, and ornamented with a tuft of scarlet worsted.

The splendid bushy tails of the Yak, which have no equal amongst quadrupeds, are used throughout the East as fly-whisks, and are known under the name of Chowries. They form one of the chief articles of commerce in Thibet, being used for various purposes of ornament, besides the highly useful one of brushing away the flies and mosquitoes. They are fastened as ornaments to the ears of elephants; the Chinese dye them red, and form the hair into tufts for their bonnets; the Turks and Persians make standards of them, though commonly named horse-tails, and dye them of various colours; and they are used to decorate the throat band and croups of horses. The hair of the flanks is used for ropes, which are as strong as those of hemp; and also for cloth for tents—which are, however, not impervious to wind and rain. Mats are made from the same material; and it is also made into a strong fabric, which is stated to make excellent riding trousers—doubtless, also, of lasting quality. The hair being applied to all these various and useful purposes, it is no marvel that, as I am informed by Dr. Adams, the attendants upon the Yaks are always remarkably industrious in combing their sleek and silky sides, and taking care to lose as little as possible of so valuable a commodity; which, besides the various uses enumerated above, is also employed in the manufacture of gauze shades, used by travellers for the protection of the eyes in crossing the snowy passes of Thibet.

The richest produce, however, of the Yak, because the most ample and continuous, is the abundant quantity and rich quality of the milk, and the butter produced therefrom, which is excellent. Curd is also made from it, and is eaten either fresh, or dried and powdered into a kind of meal. The

butter, however, is the chief article. It is preserved in skins and bladders, and the air being thus excluded, it will keep in the cold region which they inhabit throughout the year; so that their owners, after some time tending their herds, and accumulating a sufficient supply, have only to load the cattle, and drive them to a proper market with their own produce, which constitutes throughout Tartary a most material article of trade.

It will thus be seen, that this remarkable animal may claim to rank among the most useful animals which the great and good Creator has given to supply the wants of Man; it being as serviceable to the natives of these elevated and rigorous regions as the Camel is to the Arab, and the Reindeer to the Laplander. They live and thrive and enjoy life where the horse, whose work they perform, would perish; they are their own caterers in winter as in summer; their footing is sure where horses would be lost; they are used for the saddle, for ploughing, and as beasts of burden; their milk is remarkably rich and nutritious; their flesh is good; their hides and hair are both serviceable in various ways; their horns are used as drinking cups; their bones are consumed for fuel; while their flowing bushy tails form a ready-made remedy for the greatest pests of the East, besides being used as ornaments and trappings fit for, and found in, the service of its most luxurious princes.

A bull Yak, of the domestic breed, lived some time in England in the possession of Warren Hastings; a cow of the tamed race lived at Knowsley about two years, but died shortly after removal; a half bred bull, of which a characteristic drawing is given in the Proceedings of the Zoological Society of London for 1849, was also living at the same time in the possession of the late Earl of Derby, and is still alive at the Belle Vue Gardens, Manchester; and within the last few months about a dozen Yaks have been imported into Paris, for the purpose, if possible, of acclimatation.

Capt. Smyth's notes on the Yak are as follows:—

"My principal object in visiting Hoondes * and Thibet in 1853, was to get one or two wild Yaks, at that time looked upon as almost fabulous animals. The Bhootiahs (a tribe of hill-men, living far in the interior of the Himalayah, and carrying on a trade with the Tartars,) used to bring down to Almorah a great many stories of them, and a few skins; but none, so far as I was aware, had ever been seen by an Englishman, until 1852 one was seen and shot by Mr. Beckett, a sportsman from

* That part of Chinese Tartary north of the district of Kumaon and Gurwhal, and of part of Nepal.

Almorah, in Hoondes, just across the passes leading into that country from Almorah. The spoils (head and skin) were brought into Almorah in great triumph, and the event was very much talked about. In 1853 several were shot. I shot six (all bulls), five of them very near the place where Mr. Beckett shot his. A party who went to the Mausurobur lake, about eighty miles to the east of where I was, shot three; and Wilson, the great Himalayan sportsman, shot one or two in Roopshu, 300 or 400 miles to the north-west of where I was, near the great Chumereri lake; and I dare say several have been since shot.

"The nomade Tartars keep immense herds of the domestic Yak; I have sometimes, in passing an encampment of these shepherds, seen hundreds of Yaks, and thousands of Shawl-goats, and a beautiful sight it is. The goats are almost all snow white; the Yaks differ in colour, some are white, pie-bald, or blue, black, &c. They have long hair depending from the flanks, and nearly reaching the ground. The domestic Yak is not nearly so large as the wild one, and the latter is invariably a pure black, mingled with brown. It occasionally happens, however, that tame Yaks wander into the mountains, and meet the wild ones; the result is a hybrid offspring, nearly black in colour, with a white streak on its back, or a white foot, or spot somewhere. These, when grown up, are larger than the tame, but smaller than the wild Yak; and when it is a tame Yak-cow that has got loose, the young one seems to partake of the nature of its father, and the Tartars cannot tame it. The tame Yaks are used as beasts of burden by the Tartars in their trading operations; and they load them with borax, salt, &c., which they send across the Himalayahs, over the high passes, and dispose of to our Bhootiahs, who live on our side of the different passes, and who give them grain, cloth, and other English goods, in exchange. These Yaks (tame and wild) cannot endure the slightest degree of heat. The 'Jhoopoo,' a cross breed between the tame Yak and common cow, are much used as beasts of burden, as they can stand extremes of heat and cold almost equally well, and they are much tamer than even the tame Yak.

"The Yaks (tame and wild) are like all other animals in Thibet, provided with the fleece of 'pushm' wool, as a protection against the severe cold. This 'pushm' is a great article of trade; it almost all finds its way to Cachmere, across Chinese Tartary, where it is manufactured into cloth. The Yak 'pushm' is of course much coarser than the goat 'pushm,' and is not so valuable. The wild Yaks are found in certain localities in different parts of Hoondes and Thibet; the bulls herd separate from the cows, and wander a good deal; while the cows, from what I can learn, chiefly remain about the same place, in of course the very wildest places, where man scarcely ever goes. I never saw any cows, so I cannot speak from personal experience; but the party who went to the Mausurobur lake in 1853, appear to have seen an immense number of them.

"The high mountains to the north of the 'Milum' and 'Neetee' passes from Almorah to Hoondes, where I shot all my wild Yaks in 1853, are visited by the wild bulls only, between April and September. Cows are never seen there. Some of these mountains rise as high as 24,000 feet above the sea.

I saw altogether fourteen Yaks, nine one day in one herd, three another, and two another day, all bulls. They were in the most retired places: and I am told, and I think it true, that whenever they see a man, at whatever distance, off they pack, and do not stop anywhere within fifteen miles or so. I was led to believe they were very sagacious, but I found them easy enough to stalk, and stupid unwieldy animals after they were hit. I was also told they were very savage; and on my first meeting them, (nine of them,) and when by a judicious stalk I got within an easy distance, I certainly expected an adventure, but I was disappointed with all, except one, which charged me, but which I knocked over with a bullet through his head when within ten yards of me. I got three out of this herd of nine. They were, when I first saw them, lying down at an elevation of about 18,000 feet, on the snow.

"All the other Yaks which I saw were very nearly at as high an elevation. They seem to go down to grass about sunset, feed all night, and are up again at this enormous elevation by a little after sunrise. I am talking of the months of July and August. Doubtless in the winter months they go as low as they can; the lowest valleys in this country are about 14,000 feet above the sea. I have seen their traces very numerous as high as 19,000 feet, and in the valleys as low as 15,000 feet. Those at the latter elevation were always old traces, doubtless of April, May, and June, before the passes were open, and before a single man had arrived in the country. One of the six that I shot had a white mark on the back, and he is smaller than the others, shewing his descent (on his father's side) from a tame one. This specimen is now set up in the Edinburgh University Museum. In 1854, the only wild specimens of this animal in England were, one in the India House Museum, and one in the Crystal Palace.

"Wild Yaks are known to exist in the Karakorum mountains, north of Ladak, and south of Yarcund and Cashgar."

The Thār, or Jemlah Goat.

Hemitragus Jemlaicus, (H. Smith.)

This animal differs from the true Goats in the peculiar form of its horns, which are very short and deeply notched in front, in having no beard, and in some other points of structure. It was first described by Col. Hamilton Smith, in 1827, in Griffiths' translation of Cuvier's 'Regne Animal,' and named by him *Capra Jemlahica*. Dr. Gray has since instituted the genus *Hemitragus*, proposed by Mr. Hodgson, and placed it at the head of his sub-tribe *Capreæ*. In Nepal it is known by the name of *Jharal;* in Cachmere, according to Mr. Vigne and Dr. Adams, it is called *Krás*. The latter gentleman informs me that it is abundant on the banks of the river Chenub, Kistuar, near Cachmere; that the female, whose horns are small,

has no mane; and that the kids are white, with a black stripe down the back.

Capt. Smyth adds the following :—

"The Thār is found at an elevation of from 8,000 or 9,000 feet in winter, to 15,000 feet in summer. Thār stalking affords, I think, the best sport (certainly the most dangerous) in the Himalayahs. They are found on the face of the most frightfully precipitous ground, and it requires a good head and steady nerve to pursue them with any chance of success. The males are about three times the size of the females, and except in the rutting season (from beginning of October to middle of November) herd separately. From May to October the males are very difficult to find. As the snow melts on the heights, and the grass springs up, their grazing ground becomes more and more extended, until in August and September they are sometimes found as high as 15,000 feet. The females keep more together in the lower ground, and are seldom seen so high as 10,000 feet, so that with very little trouble, comparatively, one can get a good day's sport among them. I have known many Himalayah sportsmen who have killed heaps of Goral, Kakur (Barking Deer), Bears, &c., the summit of whose ambition was to kill one large male Thār.

"Between May and October the males only feed very early in the morning and at sunset; during the day they lie down in out-of-the-way places, and are very difficult to find, so that I have frequently been out after them in those months without seeing any. The one and two year old males herd with the females the whole year round. Towards the end of September a few females are often seen in the high grounds with the male Thār, these they entice down to the low grounds. This is the time to shoot the males. They are now in the best condition, very fat, and their coats beautifully black and glossy.

"During the rutting season the males are always fighting, and numbers of them are killed by falling down the crags. I have frequently come across their remains. An old Thār is a really fine animal, and one does feel a great deal of satisfaction in knocking one over; but no one should go after them who has not full confidence in his own powers of climbing, and the steadiness of his head. The ground is something frightful. I always used to take off my shoes; afterwards, to save my feet from thorns and rocks, I used to bind a lot of old cloth, &c., round my feet, and a network of string round all, tied tight about the instep and ankles. This I found most useful in climbing. A long rope is indispensable to let one another down, or haul one another up places otherwise impassable, so that two or three people should always go together. The natives are so fond of the flesh of a male Thār, that I have occasionally seen them rip open one I had just shot, and devour the liver, fat, &c., raw. I have eaten it cooked in various ways, but the flesh is too strong tasted to be agreeable. I do not know the weight exactly of a large Thār, but I remember the largest one I ever shot was in October. He was lying on the edge of a rock, on the face of an awful precipice. By taking off shoes and stockings I climbed down this precipice, to within about one hundred yards of him, and straight above

him; and my bullet broke his spine, close to the neck. He was paralysed, and could only move his head. This was fortunate, as if he had struggled he must have tumbled down this precipice, and been smashed to pieces 2000 feet below. As I wanted to make a specimen of him, I sent for seven of my coolies (porters). We cut down a small tree, tied him to it, and attempted to move him out of his perilous position. With our united efforts (eight of us) we could only move him about two yards. After he was butchered, there were six heavy loads of his carcase to bring up to camp.

"At this season of the year they look, from a distance, like Black Bears, and are hardly smaller. In May, June, and July, before they get their new coat, they are of a rusty grey colour, and have a mangy appearance. They have long hair on the neck, almost like a mane. To make a good specimen, the best time to shoot one is towards the end of November. In October they are so fat it is impossible to get the fat out of the skin. Later in the winter the hair is thicker, but loses the gloss it has in October and November; and the long hair of the neck gets torn off by thorns and brambles. The female is in best condition, both for eating and to make a specimen of, in December.

"There is a smaller kind of Thār, (of which also I have a good specimen), inhabiting lower ranges, the males of which do not go up to the snow in summer, like the large males. Their origin is doubtless the same; and the difference of size is accountable from local causes, and the greater heat of the lower hills.

"A great many natives lose their lives in pursuit of the Thār, like the Chamois-hunters in Switzerland."

The Argali Sheep.

Caprovis Argali, (Pallas.)

This gigantic animal, better known as the *Ovis Ammon*, was placed by Linnæus with the Goats. Pallas subsequeutly proposed for it the genus *Ægoceros*, and the specific name of *Argali*. Dr. Gray has adopted the generic name of *Caprovis* of Hodgson, but he divides this into two subgenera; *Musimon* for the Moufflon, &c., and *Argali* for the present species and the Big-horn of America, if really distinct. The hair of the Argali, like that of most rock-frequenting Ruminants, is short, harsh, nearly erect, waved and crisp, and attached to the skin by a very fine point. The color is chiefly pale brown, darker on the fore part of the limbs; the tail is white beneath, and there is more or less of white on the rump.

Dr. Gray, after carefully comparing specimens from the Himalayas, received from Mr. Hodgson, with others from Siberia, received through Russian naturalists, is unable to discover any points of difference, though

Mr. Hodgson says they are distinct. Dr. Gray agrees with Mr. Blyth in considering the North American species, termed the *Big-horn*, as probably identical with the Siberian.

Dr. Adams informs me that in Ladakh this species is called *Nâboo;* he was only on the borders of its range, but was told that it grazed the country in immense flocks in Chinese Tartary. Dr. Hooker speaks of flocks of fifty on the borders of Thibet, visited by him, where they are known under the name of *Gnow.* They were very seldom seen, and always at great elevations.

Captain Smyth's remarks are:—

"The *Ovis Ammon* of the Himalayahs is found in the country on the *North* slopes of those mountains, and on the low ranges of hills rising from the plains of Thibet; it is also sometimes, though rarely, seen on these level plains. These plains are at an elevation of from 14,000 to 15,000 feet above the sea, and the hills on which it is found rise 2,000 or 3,000 feet higher. It is a splendid animal; the ram, which stands about as high as a donkey, is very much if not the same animal as the *Ovis Argali* of the Rocky Mountains. The head of the ram, with the horns, will sometimes weigh as much as forty pounds. The shape and curve of the horn is exactly that of the domestic ram. The largest one I have shot measures in length, taking the outside of the curve, forty-one inches, and in circumference seventeen and a half inches. The female is much smaller than the ram, the horns are small and flat, eight or ten inches long, and generally curving outwards towards the points. Males and females herd separately, and as far as my experience goes, are seldom to be found any where near together. They are not numerous, and unless one has information of where they are to be found, a great deal of time will be wasted in looking for them. They haunt localities, males one place, females another, which are very far separate. They have seldom been shot by Englishmen, as their haunts are very far away in the interior of an inhospitable country. I do not think a full-grown ram was ever shot by a European in *this* country till about five or six years ago, (and very few have been killed since). Several females had been killed previously. Their feet are formed differently from the Burral's, and they cannot go into precipitous ground. I have always found them more difficult to stalk than any animal in the Himalayahs. The ground where they are found is so open, and they are so particularly wary and sensitive of smell, that I have been out after them, day after day, without getting a shot, though seeing some every day.

"*Ovis-Ammon* stalking is, I think, the most fatiguing work of all. To walk any distance on level ground at such an elevation is exertion enough; but walking up and down hill at an elevation of from 15,000 to 17,000 feet, is killing work for a man not in first-rate condition. Unlike most other wild animals, they do not seem to care about being near water; while the grass is green, (*i. e.*, until September, when it begins to be bitten by severe

frosts), they only drink once in four or five days, and one is as likely to come across them ten or twelve miles away from the nearest water as anywhere. I once camped about a mile away from the only water in a neighbourhood where I knew *Oves Ammon* were, thinking it likely I might come across them as they came to drink, but I never met them near the water, though I often saw them four or five miles away from it. In 1852 I wasted about a month in looking for *Oves Ammon* in a country I knew very little about, though I knew they were to be found there, and during all that time I only saw one small flock. I had no person with me who knew their haunts, and I would strongly dissuade any other sportsman from following my example. He may, of course, stumble upon them, but the chances are he would be as unfortunate as I was then. In 1853, profiting by experience, I took two men with me, who knew most of the *Ammon* ground in this country of 'Hoondes,' and was very fortunate in consequence, bagging nine of them. It is evident that the rams frequent different places at different seasons of the year. In winter, numbers of them die; in some places I have come across a great many skulls and carcases of them, where I have never seen the animals themselves. I have seldom found the carcases of the females. The ram *Ammon* is a splendid animal, and I know nothing so exciting as *Ammon* stalking, chiefly on account of the difficulty of meeting with success. The skin and hair of the *Ovis Ammon* is very much like that of the Burral, and they, as well as the Burral, and all animals (wild and domestic) of this elevated country, are provided with a fleece of fine 'pushm' wool, as a protection against the severe cold."

The Burrhel Sheep.

Pseudois Nahoor, Hodgson. *Ovis Burrhel*, Blyth.

The Burrhel Sheep was first described as such by Mr. Blyth, in 1840, from a specimen in the Museum of the Zoological Society of London, shot in the great snowy range near the Burenda Pass (lat. 31° 23′; long. 78° 12′), at an elevation of from 15,000 to 17,000 feet, by Thos. Smith, Esq., 15th Native Infantry. Mr. Blyth believed its smaller size and smoother and darker horns to prove it undoubtedly distinct from the *Ovis Nahoor*, several years previously described by Mr. Hodgson as inhabiting Nepal. Mr. Hodgson, however, subsequently claimed the Burrhel as no other than his Nahoor, the common name by which it is known to the Nepalese. On this question Capt. Smyth says, "I have seen an immense number of Burral in my time, and have several times shot two out of the same flock differing in size, color, and shape of horns considerably, and I do not see any necessity for making two species of them."

The Burrhel is distinguished from the true sheep by the want of the crumen or eye-pits on the front of the face; by rounded uncom-

pressed smooth horns, directed upwards and backwards, with great divergency, forming nearly right angles with the axis of the skull, having the points bent inwards, and by the short deer-like tail. They gestate five and a half months, and lamb in summer.

The Burrhel presented by Capt. Smyth stands about two feet ten inches high at the shoulder, measures four feet ten inches from the nose to the root of the tail; the horns measure round the curve one foot ten inches, and have a circumference at the base of eleven inches. The general colour on the body and outside of the limbs is pale ashy brown; the face, chest, and front of the legs variegated with dark brown; the cheeks, throat, inside of the ears, the belly, the back of the legs and the tail beneath are white; a brown line runs along the flanks, separating the pale brown above from the white of the under parts. The horns are pale blackish brown, the hair short, thick, close, and of even length over the whole animal.

The following are Captain Smyth's remarks:—

"The female is about the size of a Leicestershire sheep. The ram (much larger than the sheep) has horns measuring on the outside of the curve about eighteen inches, circumference in thickest part twelve inches, The horns of the *sheep* are flat and short, six or seven inches long, differing in shape and size in different animals, but generally rising straight up from the head. The colour of these animals varies at different seasons of the year. In winter their coat is of a glossy black. They lose their winter coat at the end of June. In April and May it is a greyish colour. The hair, three or four inches in length, is quilly and brittle, underneath which they have a fleece of very fine 'pushm,' or shawl-wool. The mountains they inhabit are almost inaccessible in winter on account of snow and cold, so that very few specimens of them, in their winter-coat, have been brought down. These beautiful animals are found very far in the interior of the Himalayas, in the heart of the snowy ranges, and are only met with in the grass lands far above the forest limit. Although this ground is much more open than the ground where the Thâr is found, yet the Burral are seldom seen, even while feeding, very far from precipitous ground, where they retreat when alarmed.

"April, May, and June are the best months for shooting them, *i.e.*, a sportsman is more likely to make a good bag in those months; as, on account of the depth of snow at that time in the higher regions, and the scarcity of grass, the ground they are to be found on is limited. They are, however, thin and in bad condition then, and the females in young. In June they begin to lose their winter coats, and the skins are not worth preserving, In July and August they have a very mangy appearance. In August they begin to get fat, and in September and October they are in capital condition for eating, and the flesh is excellent. At that time, however, they are difficult to find; the snow

having melted, and the young grass grown on such an immense extent of ground, that the Burral are scattered, and they are at that time only found on foot in early morning and evening, as with an hour or two's feeding they get quite sufficient grass. In the early part of the season they are on foot nearly the whole day, on account of the limited supply of grass, and have to wander about from place to place in search of it. They are very fond of the yellow Gorse flowers in April and May. In fact they get very little else at that time of the year.

"The male and female generally herd separately, though they are sometimes seen in company. The young males of one year old are always with the females. The rutting season is November, and the lambs are born in May and June, one or two lambs at a birth. Very few instances, if any, of a young lamb having been caught are known, so, it is supposed, they drop their lambs in the most inaccessible places, and that the lambs get the use of their legs almost immediately.

"Burral and Thār shooting are each in their way the perfection of stalking. Thār shooting requires steadiness of head and good climbing; but Burral shooting requires great power of endurance. From the great elevation of Burral ground, the exertion and fatigue of walking up hill is far greater than in Thār ground; and a person to be successful must be in strong health. These Burral are the wildest possible animals, and require the greatest care and judgment to stalk. A good telescope is most requisite. It is absolutely necessary to discover a flock before they have seen you, which, without a telescope, is very difficult, for their senses of sight and smell are most keen. You generally discover the Burral with the aid of a telescope at a long distance, from one to two or more miles. You ought then to sit or lie down and arrange your stalk. If while stalking them you see they have become alarmed, which sometimes happens without their having seen you, you may at once give up the chase, as there is not the most remote chance of your getting a shot. When alarmed in this way, they get up one by one in the most deliberate manner, perhaps begin to scratch or stretch themselves, and walk away so quietly that a novice in Burral shooting thinks they have not seen or smelt him, and will follow them up. The Burral walk quietly away, but much faster than the sportsman can walk, for miles and miles, till at last, as if thinking they have made quite a sufficient fool of him, they will gallop off for miles further, until they become lost to view amidst the eternal snows and glaciers.

"Burral are, however, sometimes stupid animals. It occasionally happens that after a very successful stalk, or accidentally, you come upon a flock suddenly, within seventy or eighty yards distance; they are then just as slow and deliberate in their movements as if you were half a mile from them. You may fire all your barrels, and sometimes have time to load again, before they are all out of shot. One day I had only a single rifle with me, and I came upon a flock of rams in this way by a judicious stalk. I fired, and had time to load twice and fire two more shots before they were out of range. I got two of them. About an hour afterwards, on reaching the ridge of a hill, I accidentally stumbled upon another flock that was feeding behind the ridge, and did precisely the same. I got three shots, and

bagged one of them; another, that I wounded, unfortunately got away.

"Burral are found on both sides of the snowy ranges of the Himalayas, and all over Thibet and Hoondes. I think this must have been the country they originally came from. This country, however, is in most places flat and open, and I have said before that Burral, although they feed on flat open ground, are seldom far away from some precipitous ground, to which they retreat on being alarmed. Wherever such ground is met with in that country, there are certain to be Burral. They are precisely the same animals as the Burral of our side of the Himalayas. On the South side of the Himalayas the Burral have an enemy in the Snow Leopard (indeed, these two are the only animals found on the South side, between 12,000 and 16,000 feet elevation), and on the North side the Chauko or Thibet Wolf kills a great many of them. It is hard to conceive what they live on in winter. They never go lower than the limit of forest, which, in the Himalayas, is about 11,500 feet. They must live on the grass that springs up in summer on the faces of precipitous ground, too steep for the snow in winter to lodge upon. A great many are swept away by avalanches. I have often discovered their remains buried in snow. The snow, of course, preserves them, and I remember once eating a Burral in the month of June, which, I judged from its coat, must have been buried by an avalanche in December.

"In stalking Burral one should be very careful not to expose himself. They are very sharp sighted, and if once a Burral sees a man, at whatever distance, it may be two or three miles, he is off at once, and there is no chance of getting a shot at him. In stalking a Burral, one should continually look round to see that there are no *other* Burral in sight in any other direction, as, on being suddenly alarmed by the appearance or smell of a man, a Burral will start up, utter that shrill double whistle they invariably give on being alarmed, and will not only go away himself, but every Burral within hearing (within a circuit of a mile or two,) will move off immediately. I have frequently lost my shot in this way, or by putting up a Ptarmigan, or a Snow Pheasant, which, on being flushed, screams as if the world were coming to an end, and always frightens away all the Burral in the neighbourhood. In stalking Burral, if I see any of these birds, I always make a detour to get out of their way. If in stalking *one* flock of Burral, another flock or a single Burral is seen in another direction, it is often advisable to leave the first, and go after the latter; but this must be determined by the nature of the ground."

THE CASTLE HILL OF PENWORTHAM.

By the Rev. W. Thornber, A.B., Trin. Coll., Oxon.*

(Read 1st January, 1857.)

Antiquity, tradition and history, combined with nature's gifts, have lavished upon Penwortham much renown, and surrounded its heights with a halo of interest and beauty, that have rendered them almost classical. The grandeur of its locality, its towering eminence, the noble winding stream of the Ribble at its base, the woods which embosom it and toft the verdant dale which it overlooks, are worthy of the historian's pen and the painter's pencil. The Britons admired it as the green hill on the waters; the Roman sentinel from its summit hailed the laden galley on its way to Coccium; the Saxon thane there flew his hawk at its quarry, there speared the wild boar and feasted on it with his retainers; the Norman baron held his "king's court" on Castle hill; the priest and his penitent told their beads and pattered their prayers at the shrine of its priory; and the pedestrian in search of the picturesque, whilst ascending its steep brow, or resting himself on the steps of St. Mary's well, has listened with delight, or a moistened eye, to the melodious chimes of the sweet bells of Penwortham church. These associations will receive additional lustre by our society's "find" of last year,† if in my enthusiasm I make not the mistake of breaking a lance against a windmill instead of a giant.

Castle hill is situated on the north eastern spur of the heights of Penwortham, having in front a level area of some size; whilst on the south it is separated by a deep gulley from the back of the church. In former times, the stream of the Ribble washed on two sides the base of the cliff from which it rises, and on the west a sunken road ran between the baronial fortalice of the Bussels and the priory of St. Mary's, down to the old ferry over the river; so that the one might obstruct the passage of an enemy and the other remind a friend of the duty of prayer on the outset of a journey. Tradition loves to gossip concerning this spot. The tale,

* Aided by the notes and illustrations of Mr. C. Hardwick, of Preston.

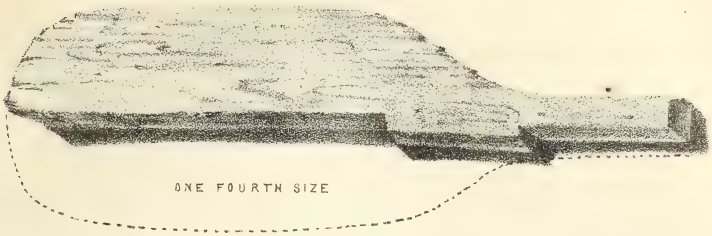
† The hill was examined on the 24th of June, 1856, during the Excursion of the Historic Society; also on the 23rd and 25th. See Transactions vol. viii. p. 256.

however, most stoutly persisted in is, that from the vicinity of Castle hill, or from the priory, there existed a subterranean passage, which communicated with the hospital at Tulketh on the opposite bank of the Ribble. Veritable as this tradition is deemed, I paid little regard to it, when together with other members of our society I visited Penwortham hill; but busied myself in ascertaining that the mound, which the workmen were excavating, rose about eighteen feet above the level of the churchyard, and from sixty-five to seventy-five feet above the base of the water-worn cliff on the east. Its circumference is two hundred and twenty yards, and was probably more, previous to its diminution by the undermining action of the stream. As you ascend the summit, you cross several circular terraces from each of which spring mamelon mounds, that become gradually less. As a whole it resembles the conical beacon hills on Sussex downs, though like them Castle hill has never been circumvallated.

The profile of the hill and horizontal plan of the excavations, fig. 4 and 5, plate iii, will aid my description. A trench being opened from A and H at the north east side of the mound was extended at the depth of eleven feet to C; then after an interval of space between C and D a shaft was sunk at D. These cuttings pierced through a mass of mixed red sand and marl, and a thin layer of black viscous matter formed of decayed vegetation, about six feet above the more important remains. At the first sight, I was disposed to think that the hill was of a geological and not of an artificial formation. A little closer observation, however, manifested the fallacy of my hasty conjecture. The deposits were not so dense, or close as a natural structure of earth would present; but they were altogether destitute of that compact texture of marl, which we afterwards found beneath the pavement soon to be referred to. Our discoveries commenced at the bottom of shaft D., for we here exhumed a singular piece of workmanship, composed of hazel wands, cross pieces, and rafters. The principal portion of these had been used in their natural, undressed, green state, and constructed and at times interlaced with great care and nicety. The wands were somewhat thicker than one's thumb;* in one place laid perpendicularly, and very closely side by side, in another,—and here the roof had been thatched,—at short, but regular intervals; in a third, they were wattled. These wands rested on horizontal cross pieces, which in return were sup-

* One of these may have been the remains of the outer wall:—specimens of each are preserved.

FIG 1.



ONE FOURTH SIZE

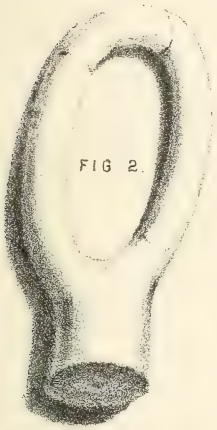


FIG 2.

FULL SIZE

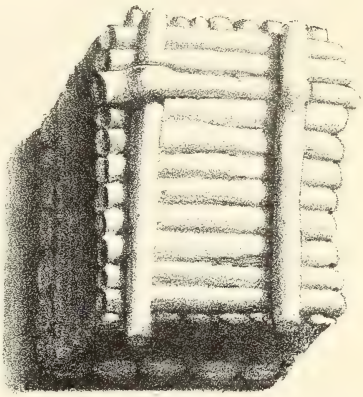


FIG 3.

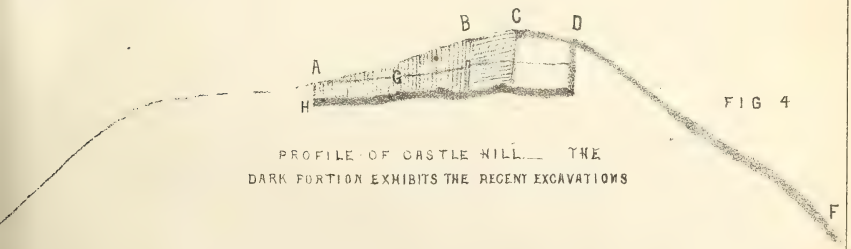
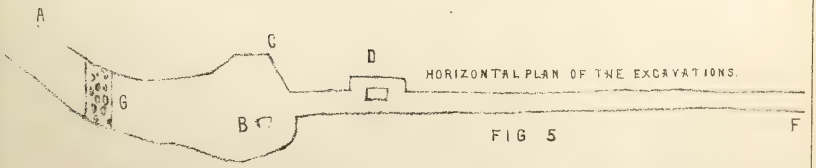


FIG 4

PROFILE OF CASTLE HILL. THE DARK PORTION EXHIBITS THE RECENT EXCAVATIONS



HORIZONTAL PLAN OF THE EXCAVATIONS.

FIG 5

REMAINS FOUND IN THE "CASTLE HILL"
PENWORTHAM

ported by thicker rafters, that appeared to have run from the plate of the building to what is now called the ridge. All these wands, cross-pieces and rafters, except those which had been hewn and in previous use, as well as the interlacing binders, retained the silvery hue of their bark, and not only were the slender wands of the roof moulded by pressure from above round the cross pieces; but the rafters in a similar manner had formed matrices in the wood, which they sustained. All were black with age, decay and smoke, and many exhibited undoubted proofs of having been portions of a more ancient and substantial building.

I will not undertake to determine whether all the roof had been thatched: I think not, certainly in some parts we found no signs; but in others, both from above and beneath the timber, was removed a strewment of rushes and grass of various kinds, especially the *Rumex acetosa* in seed, and which, I observed, grew at the time of our visit, most profusely around the hill and on its summit. Beneath these lay a festering mass of debris to the thickness of two feet six inches, which concealed a rude and uneven pavement of river boulders. These were embedded in a greyish kind of earth, that doubtless had once been surface soil; but it was not easily recognised at first on account of its being saturated with animal matter and thickly maculated with white spots, which on exposure to the air quickly turned blue. This effect is produced, Mr. Hardwick says, by *Vivianite* composed of the phosphate of lime from bones in contact with iron. Such was the case here, this chemical compound being formed from the ossiferous remains and metal instruments, buried in the debris, their fluid matter had percolated through the pavement into the substance beneath. Besides, the preservation of the articles discovered lying on the pavement, must be ascribed to the same cause. Time had but little corroded the iron.

The outer walls of this antique ruin were most probably constructed after the manner of the roof, by strong poles planted side by side, by wattling, or by "raddle and daub"; but, that the building had consisted of more than one apartment seems probable from the different methods of roofing adopted, and a perceptible variation in the height of the pavement. The main portion, however, appeared to have been circular, from the fact of broken stumps of uprights taking that form; and these uprights had been sharpened by a keen small axe, evidently not a bronze one. The pavement of the interior was disclosed at the bottom of shaft D, in figures 4 and 5, plate iii; but the whole of it

was not exhumed;—only thirteen yards in length by six broad. Nor were any signs of the margin met with at any point, except the north; whilst the circumference of the hill, where the paved floor of boulders rested, could not be less than one hundred and forty yards. Thus we can merely guess at the size of the whole building, though there may also have been a stockade round the outer rim of the summit, now totally decayed. The method of supporting the roof of the principal apartment at least, may be conjectured with greater certainty. At B in figures 4 and 5, plate iii, there remained fixed in the ground a rude, heavy, and partially squared oak post, which had been broken off five feet from the floor, and bored with three holes for the insertion of pegs. This, perhaps, was the centre pillar, the main support of the roof; but to what use the solid, broken planks that lay on the pavement on the north east and south west sides had been converted, it is difficult to determine. I will only record, that one of them was pressed upon two strong rafters and crosspieces, and that both had been riven and not cut by the saw; since their knots had been torn from their sockets. They may have been a portion of the outer wall, or roof of the building, as the holes through them and the foot length pegs found near, would seem to testify. One thing is certain, the age so visibly stamped on them, and the centre pillar, proclaims that they have witnessed many a restoration of such a fragile building as the one from which they were disinterred.

The question now occurs, who were the occupants of this dwelling on Castle hill; when was it destroyed; and who elevated the mound to its present height and formed its conical shape? To these questions we may perhaps obtain an answer by a near inspection of the bones, instruments, and even the building itself, out of the ruins of which they were exhumed.

In the early period of our island's history, dense forests covered the face of the whole country. The Doomsday survey records that in the Confessor's reign the adjacent parish of Leyland contained woods eight miles in length by four and a quarter broad, and that Penwortham also, after the conquest, was not destitute of one. And these were well stocked with game of every kind; nor during the Saxon period was the owner of the land restricted from free warren over his property. At a distant period the huge-horned *Bos primigenius*,—was it the *Urus* of Cæsar?—roamed through their thickets and glades together with the *Bos latifrons* and *longifrons*, whose skulls, teeth and horns are still dragged from the Ribble,

and those of the latter exhumed from the Roman camps at Kirkham and Walton. Moreover, herds of bucks, bevies of roes and red deer (*Cervus Elaphus*,) sounders of wild swine and singulars of boars were very numerous, as well as land and water fowl, which were captured by snares and by hawking with birds from the neighbouring aeries; sports with that of hunting with the hound and horn, so highly esteemed by the Saxon nobility, that it was an essential branch of education and the business of life, except when the nobler game of war engrossed their attention.

The bones of the animals, discovered amid the ruins of the dwelling on Castle hill, all belonged to those which are given for food to man; yet as they existed from the earliest period to the mediæval ages in Britain, no inference can be drawn from them of the date of its erection, or the time when the hunters feasted on their flesh. The *Cervus Elaphus* is indigenious. Professor Owen says—"The oldest stratum in Britain yielding evidence of a *Cervus* of the size of the red-deer is the red-crag of Newbourne." A more specific character, however, of this sized deer is afforded by antlers, as well as teeth and bones, and these attest the existence of the *Cervus Elaphus* through intermediate formations, as the newest fresh water pliocene and the mammoth silt of the ossiferous caves, to the growth of existing turbaries and peat bogs. Camden speaks of them as roaming wild in his time among the Hellbecks of Richmondshire. Pies of the wild boar, red deer, and cow, slain in the woods of Hoghton Tower, feasted king James on his visit there. Nor are they yet extinct. They exist in the Highlands of Scotland, in Windsor park, and even at Knowsley.

Neither was the wild Boar totally eradicated from our thickets, in which it had sought shelter from the earliest times, until the mediæval ages. An inscription on a Roman altar records "That it was not possible to destroy it on account of the density of the woods." Whittaker of Manchester relates—"How the wild boar roved over the woods in that parish during many centuries after the Romans had departed, that it gave the name of Barlow or Boar's ground to a track in the south west of that parish, and that it retained its haunts in the wilds of Blakely within the last three or four ages." Fitzstephen in his history of London at the latter part of the tenth century, observes—"that Boars were among the wild animals, which frequented a forest, then surrounding the city." But, were the bones discovered those of wild, or domestic swine? The snout of the former was longer than that of the latter and the tusk

sometimes nearly a foot in length. The largest tusk, however, taken from a jaw found at Castle hill did not altogether exceed five inches.

Thus the remains of the red-deer and of the boar, as well as those of the other animals exhumed with them, indicate no specific time when they had been buried. We must resort to more unerring tests, if we would discover the occupants of the edifice on Castle hill; and we may perhaps learn their names by an examination of the structure of the dwelling and the various instruments preserved in its ruins. As on the north bank of the Ribble, so on the south, British remains are not uncommonly met with. On the draining of Martin Mere, seven canoes were disclosed, all formed from the trunks of trees by fire and the axe. They were different from, as well as older than, the two skin and wicker coracles of the Fylde Marton Mere. I say older; because the Britons had not then attained such skill in the weaving of baskets, as to enrich the language of Rome with the term "bascauda." A bronze celt was likewise discovered in the vicinity of these canoes, which Dr. Leigh pronounces to be,—"one of the greatest relics in the universe;" nor will we criticise his enthusiasm after seeing a representation of one of Nimrod's sappers and miners making use of a similar weapon or tool, against the fortifications of a walled city. But British remains can be appealed to much nearer to the scene of our history; for Mr. Hardwick affirms, that they exist beneath the Roman debris at Walton. Nay, the old name of Penwortham is of British origin, thus,—Peneverdant is formed of three words—pen, werd or werid and want, as Caer werid, the green city (Lancaster) and Derwent, the water, that is the green hill on the water. Such being the case, we may not unreasonably expect traces of our Celtic ancestors at Castle hill. Let us bring to the test the discoveries made there.

It is difficult to write correctly about the dwellings of any ancient people; so very perishable are the materials with which they were constructed. Their tombs are the best memorials of their existence and the preservers of their domestic utensils; since the dwellings of the dead have proved more permanent than those appropriated to the living. The Britons in summer occupied the summits of circumvallated hills, which the Welsh call "Caers" and the Gauls "Duns." Cæsar records,—"What the Britons name a town is a tract of woody country surrounded by a vallum and a ditch." Strabo corroborates Cæsar, and Diodorus Siculus tells us what the houses were. "The dwellings of the ancient Britons

FIG 1
IRON

ALL FULL SIZE

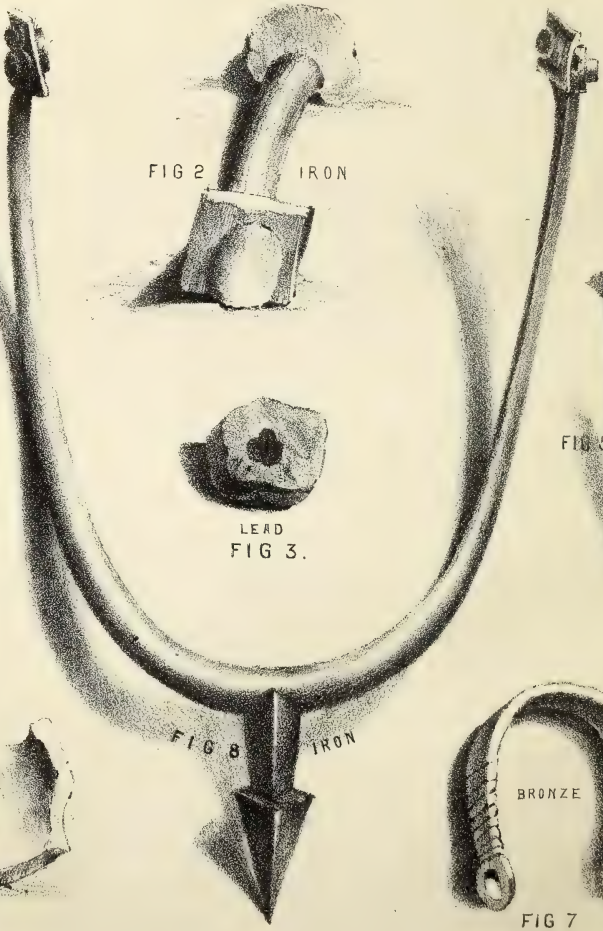


FIG 2 IRON

FIG 4 IRON

LEAD
FIG 3.

FIG 5 IRON

FIG 8 IRON

BRONZE

FIG 7

FIG 6
LEAD

METAL ARTICLES FOUND IN THE "CASTLE HILL",
PENWORTHAM.

were wretched cottages of a circular form with a tapering roof covered with straw, at the top of which was an aperture for the smoke to escape: the walls were wattled and the chinks filled with clay to exclude the cold." Such were the better kind of "tuguria;" but the huts of the humblest were little better than the holes of foxes. The ancient abode on Castle hill seems to have some little resemblance to the above description; yet there always is a similitude in the efforts of any people, climbing the first step of civilization. Castle hill, however, was never circumvallated, according to my judgment; nor was the erection of the dwelling a first effort; as its extensiveness, the ingenuity displayed on the roof, the use of an iron axe and a borer, &c. clearly demonstrate. Neither had it possessed a tapering roof after the fashion of a child's rush cap, or like the British *cab* lately disclosed beneath Pilling moss by the Rev. J. D. Banister, where the trench in the clay proved its circular shape, and the long alder poles lying near, amidst huge trunks of charred oak trees, proved the use for which they had been prepared—the formation of outer walls and a conical roof. Besides, the articles pronounced by some to be of British construction are of very doubtful origin. The hand paddle, fig. 1. pl. iii. found near A on the outside of the ruins, is assuredly such a one as might have belonged to a primitive race. The blade is broken on one side; but restored like the other, it is very similar to those with which the islanders of the Pacific handle their light canoes. If you assert that it was the paddle to some fishing coracle, you create an argument against its ever having had a Celtic owner; because Xiphilimus relates—"that the Britons never taste fish." Yet that such was its use is probable from mussel shells being buried at the same depth in the debris, as well as two net weights,—the pieces of lead, fig. 3 and 6, pl. iv. the one round with a hole in it and the other rolled up; unless, together with a pierced upper part of the head of a red-deer's thigh, or shoulder bone, you aver, that they have been amulets. Besides the presence of goose, hare, and rabbit remains, with these articles, militates against the assertion; for the flesh of the two former was eschewed as food, and the latter was introduced by the Roman conquerors of Britain. We must look therefore elsewhere for the occupants of the dwelling on Castle hill.

Dr. Kuerdon with much ingenuity attempted to fix a Roman station at Preston; but his learning was of no avail, because he was unable to produce a single Roman vestige that had been found within its precincts.

He was aware, that there must be a castrum somewhere not far distant; but although ever since his day many antiquaries have hunted about for the identical spot, it was the fortune of Mr. Hardwick to earn the crown, worthy to adorn the brow of such a discoverer. He has proved Walton to be the site of Coccium, so earnestly sought for, by the production of coins, fibulæ, pottery, &c., which he had there collected. And the agger, that branches from it southward, abounds with memorials of Roman occupancy on both sides. In Leyland, many discoveries have been made,—a gold finger ring with S. P. Q. R. marked upon it,—also four brass ones interlaced like a chain, and twenty-eight coins in its moss. Nor has the adjacent country been less prolific. At Worden there were found in 1850 no less than one hundred and twenty six coins; at Euxton a coin of Cæsar; at Whittle a numerous treasure of copper denarii; and towards the end of the seventeenth century an urceolus, which contained two hundred others, from fifty different dies, and two gold rings of the Equites Aurati. All these "finds" were made to the east of Penwortham, but not one, if I am rightly informed, in its immediate neighbourhood, or on its heights; for I conceive, that the pavement of boulders discovered by Mr. Marshall of Penwortham Lodge can have been nothing more, from its narrowness, than an ancient bridle path, very common throughout the country. Still on such a position an antiquary would expect to find some signs of an outpost, or at least an outlook, whence a view of Walton to the east and Kirkham to the west might be obtained, as well as a command of the Ribble and its ford. And such an opportunity seems not to have been neglected. The nail, fig 4, plate iv. with its flat, oval-shaped head, which was taken from the ruins at Castle hill is similar, or nearly so, to one discovered at Walton by Mr. Hardwick. The other also, fig. 5, is supposed to be Roman, and the iron rivet, Fig. 2, is in every respect the counterpart of that etched by Roach Smith as found at Settle. The instrument fig. 1, is an article of great rarity. Mr. Franks of the British Museum showed to Mr. Hardwick a paper by the Hon. R. C. Neville in the Archæological Journal of March, 1856, where several such are figured and described as having lately been discovered at Chesterford in Essex. It is pronounced to be a late Roman key. The make of it is significant:—the hoop attached it to the belt, or chatelaine; the spattle beneath gave support to the forefinger and thumb, when in use; and the square loop at the end acted as the barrel of a modern key upon the fulcrum of the lock. Here

then is interesting matter for contemplation. These Roman remains of iron give some solidity to an assumption only feebly maintained before, that the legionaries of Coccium may have planted an outpost, or outlook on Castle hill. The tale too of the subterranean passage also beneath the river is accounted for: the truth is extracted out of the mist of ages. The interchange of communication between the Roman sentinels on Castle hill and Tulketh speculæ, and afterwards by the ford and Norman * ferry here, originated this wide spread tradition.

The light of history now begins to dawn upon us. Preston, after the fall of the enfeebled Roman provincials, had risen on the ruins of Coccium, which city, although,—as Lappenberg says,—it had the right of Latium, yet bequeathed nothing of its ancient glory to the founders of the "tun" and "ham," except its Breton laws, which governed the whole of Amounderness to the reign of the first Edward. Alchfrid also had granted his lands, near the Ribble, to Eata, the Culdee; but had soon afterwards revoked his gift in favour of Wilfrid; and the ships of the Angles and Vi-kings had floated past Penwortham to Walton and Cuerdale. The heights of Castle hill therefore could not have been overlooked. We read that its ancient British name had assumed a Saxon garb, and that both it and the neighbouring parish of Leyland were royal and superior manors in the time of the Confessor; nay, more, I trust to be able to shew that the ruins at Castle hill were those of the "aula regis," the "haia," or "ham," the German ein heim of that king's representative; in fact the palace of the parish, as well as its court house.

Tacitus in his account of the Germans, Teutonics like the Saxons, says "The Germans were accustomed to dig subterraneous caverns and then to cover them with much loose mould, forming a refuge from the winter storms." Hasted, the topographer of Kent, describes many such in the heaths, fields, and woods near Crayford. Even in Wallachia at this day, the gypsies scoop out a den in a sunny hill, cross some sticks over the roof and pass the winter there. Some such an abode, or one whose outer wall had been backed up and concealed with earth, I conceived that of Castle hill to have been.

However this may be, facts seem to demonstrate that the dwelling was a

* Mandate to the Escheator for land in Penwortham, seized for withdrawing of the service of a boat over the river Ribble. Anno 10mo Ducatus Hep. Lanc. The Roman trajectus was near Walton bridge.

structure of the Saxons; for they too built their houses with wood, as is evident from the use of the verb "timbrian," to express the act of building, and in the examples of Greenstead church we have their peculiar method. It is composed of the trunks of large oaks, split and roughly hewn: they are set upright and close to each other, being let into a sill at the bottom and a plate at the top, where they are fastened with wooden pins. The houses, which William of Malmesbury contrasts with the stately edifices afterwards erected by the Normans, were much inferior, being rudely constructed with piles. Bede describing the monastery built by St. Cuthbert remarks, "Within the walls he raised two houses and a chapel, together with a room for common uses. The roof was made of unhewn timber and thatched." And how can we expect them to be anything else than rude and mean, when they were the workmanship of the ceorls and slaves of the manor? In the adjoining parish of Leyland an easier tenure than usual was allowed,—"The freemen did not work as customary ad aulā regis," "they only made a haia in the wood"—a hay, or wicker fence enclosure for the protection of the houses and cattle stalls of the lord's neatherd, swineherd, &c. It cannot mean merely a "fence," for "stabuli turæ" are frequently in connection with it; and in the midst of the great common of Layton and Lytham Hawes, a small rural village is still called the Hag, or Hay houses, the ancient homes of the tenters and grazers of the cattle, belonging to the lord and freemen of the manor and Saxon mark.

But did the Confessor's representative at Penwortham occupy so fragile and mean a dwelling as the ruins of that on Castle hill manifest? Antiquaries record the existence of a castle during the supremacy of the Saxons. It is high time to demolish so palpable a mistake, as well as that the thane of all the surrounding parishes resided therein. The Doomsday survey itself will accomplish this. "Rex. E. tenuit *Peneverdant*. Ibi. ii. car. træ, 7 reddb. X. den. Modo. ē ibi castellū, &c." You perceive when it speaks of the Confessor's time, it is in the past tense; but of the Conqueror's in the present. The change is made after a similar manner almost through the whole survey, however translators may have mangled the original, or misunderstood the meaning of terms, "Modo ē ibi castellū," must signify, "of late, or just now there is a castle."

"But surely," I hear you exclaim, "a great king's representative, resident in a superior manor, like that of Penwortham, would not issue his laws and regulations from a thatched hut of wicker work, little better than

a dog kennel? Look at king's palaces. Alfred invented the horn lantern to protect his candles, by which he marked the progress of time, from the blasts of wind that blew through the crannies of his dwelling and swealed the wax. The address delivered to Edwin, king of Northumbria, on his reception of Christianity exhibits a similar picture. The state of man is compared to the entrance and departure of a swallow. Behold the king and his suite seated round the fire in the midst of the apartment, whence the smoke escaped as best it might, and yet all so open that a bird had free inlet and outlet during the storm.

But I must proceed to investigate other marks of Anglo-Saxon residence on Castle hill, and they shall be tested by the food on which its occupiers mainly subsisted. The Saxons were a gross people; great drinkers, and vigorous feeders. Quantity more than quality was the object of their solicitude. Edmund and Hardicanute were types of the nation. The first was assassinated at his table, when his nobles and servants were too drunk to defend him, and the other, after a life of gluttony, died of an over-abundant dinner. Now it may be fairly assumed that the banqueters were Saxons, from the very great number of the jaws and other bones of the boar we picked up, both within and without the edifice. These were vastly predominant over the ossiferous remains of other animals. Pork was the usual food on which this people battened: they even believed, that they should not be deprived of it in another world, so dearly they prized it: nay that their hero gods daily feasted on the famous boar, which was revivified for their pleasure, only to be killed and devoured again Next to pork they loved to feed upon eels. And both were plentiful: the fruit of the oak and beech fattened the one, whilst the *river supplied the other abundantly; especially after St. Wilfred had instructed his people of Preston and Fishwick, as he did those of Ripon, in a better mode of fishing. Pork and eels, however, did not alone satisfy the appetite of the chief of the hill; the bones of the red-deer, the long and broad faced ox, of the hare, fowls, &c., were pretty numerous, though by no means so much so, as those of the boar and more especially of their jaws. Singular enough none of the goat, or sheep were met with: they, by the Saxons, were chiefly prized for their wool; whilst the Normans dined on mutton: indeed the new nomenclature imposed upon articles of diet is significant.

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* Penwortham had half a fishery at the Domesday Survey.

The cow, the calf, the deer, the fowl, &c., whilst feeding and rearing, retained their Saxon names, but on the table they became beef, veal, venison, pullet; yet bacon remained unaltered, as if the conquerors were too proud and dainty to meddle with such fare, therefore had left it untouched, as only fitted for a vanquished Saxon.

The chief of the hill also exhibited another trait of his nation: his habits were not over cleanly, he paid no regard to the sweeping of his dining room floor. Think of two feet six inches depth of festering matter in the apartment, where you ate and slept. The thane gnawed a bone and cast it on the carpet of rushes that covered the pavement, and his guest and retainer threw their morsels on the heap near them. One of their archbishops was brained by the Danes after dinner with weapons hastily snatched from such collections. Our mediæval ancestors however, had not learned much nicer habits of cleanliness. Erasmus complains of the sluttishness of his times,—"Beneath the rushes, strewed on the floor, lay unmolested an ancient collection of beer, grease, fragments, bones, spittle, excrements of dogs and cats, and everything nasty." "A hall, a hall" was the summons for the rake and broom to clear a space for the dancers, and the nobleman was often compelled to seek another residence until the lately occupied one was sweetened; whilst the prudent cry of—"'Haud your honde" and "Who wants me?" was nightly heard in the streets.

The presence of such an extraordinary quantity of swine bones seems to prove the occupants of Castle hill to have been Saxons, and their intermixture with the remains of other beasts of the chase, loudly proclaim, that the severe forest laws of the Norman had not been introduced, when the dwelling was tenanted. Let me now examine whether any of the articles discovered corroborate my assumption. Some of them, I cannot appropriate, such as the hazel loop, fig. 2, pl. iii, a few finely polished stones, and that curious bright bronze instrument figured 7 in pl. iv. You perceive it is ribbed on one side, as if for ornament, and takes a *v* like shape, the bends at the top being each drilled with a hole to insert a pin. Judges pronounce these to be Saxon; but I must hesitate, since I cannot recognise their use. The hand paddle, figured in plate iii, I will, however, declare to be so, as well as most probably the leaden weights and bone amulet, the sole of a shoe with a piece of the welt neatly attached to it, the half of a knife haft with the marks of more than one instrument upon it and made of

a red deer's bone, as well as a foreign madrepore, which may have been venerated as an amulet. Nor need we wonder how the Saxons became possessed of such a one; when Alfred's sailors, Octher and Wulstan, had made voyages of discovery towards the Arctic Circle; his priest Sigelin relieved, as we are told, the distressed Christians of St. Thomas in the East Indies, and the Danes had carried Cufic coins up the Ribble to Cuerdale.

Such are the proofs of Anglo-Saxon residence at Penwortham, and so satisfactory are they to my mind, that I should have pronounced the ruins wholly so; could I believe that the Roman remains discovered there had been found and brought from Walton, or that more would not have been exhumed by further excavations. I never hoped for the production of many Roman coins; for the sentinel of an outlook would not have his purse overstocked with denarii, nor yet of many Saxon valuables; because on the first approach of his Norman successor, the thane would flee with them into the recesses of the surrounding woods, or if seized unawares, his dwelling would be plundered before it was consigned to destruction. This Ham, however, on Castle hill, whether the habitation of a single family or the "plurium conjunctiones," changed and corrupted the British name of Peneverdant into Penwortham, which name it still retains.

The question now arises, who destroyed the Ham and elevated and fashioned Castle hill to its present conical shape? Here is the book, which relates the whole history, if rightly read. The iron spur, figured 8 in plate iii, was taken from the ruins of Castle hill. It is of an elegant shape and workmanship, having the two rivets, that secured the strap, still sharply defined and free from corrosion. What, however, characterizes it is its spear-shaped spike. "The British Museum,"—says Mr. Hardwick, —"possesses no perfect specimen, nor any fragment that has been moulded with such symmetry of form." Whether this Penwortham "pryck spur" be of the late Saxon, or early Norman period is considered doubtful. Mr. Roach Smith referred my friend to his report on the excavations of the Roman Castrum of Lymne, where that antiquary seems to suppose they belonged to the former. It says,—"A penny of Eadgar found at the depth of two feet and also some iron prick spurs suggest, that the castrum may have been partially tenanted for some centuries after the Romans had abandoned it." Planche moreover records that they appear in the Saxon illuminations of the 8th to the 10th century. The Castle hill spur may

however be the work of a Norman operative, not only on account of its elegance; but for the following reasons. Planche whilst he states, how the "pryck spur" appears on the *Saxon illuminations and gives us an illustration; still tells us, that it retained its single goad during the reigns of Rufus, Henry I and II, to that of John. I have had no opportunity of examining these illuminations; but I wondered at finding the Cottonian representation of three royal personages on horseback without a spur, though depicting their costumes, as well as the harness and equipments of their steeds. Moreover, in the compartments of that historical memorial of the eventful period, which saw the Saxon dynasty swept from their possessions by adventurers from Normandy, I mean the Bayeux Tapestry, there are figured many horsemen, who wear the spear-headed spur. Harold on his way to Bosham with his hawk and hounds has his heel armed nearly in a similar way; but a needle like goad springs from a flattish globe. His followers, who accompany him, have none. On the other hand, in the self-same worsted work, the Norman knights are as much recognised by the "pryck spur," as their shorn chin and lip. The Conqueror himself and the soldiers he is addressing on the field of Hastings, Toustain when carrying the consecrated banner, together with many other instances, might be referred to. The rowel spur is supposed to have been introduced between the years 1307 and 1327; yet the registrum Honoris de Richmond testifies to the contrary, if it is to be relied upon. There, on the occasion of William bestowing lands on his nephew, the Earl of Brittany, both himself on his throne, his knights standing behind, and the grantee upon his knees, display rowelled spurs of no common dimensions. Thus, if Mr. Amyot's defence of the Antiquity of the Bayeux Tapestry be conclusive, the prick spur was used by the Normans at Hastings; and their successors, even beyond the reign of the first Edward, imitated them, as many a royal and official seal can testify. They borrowed it not from the vanquished; though, since the marriage of Ethelred, "that fine sleeping figure of a king" with Emma, "the Flower of Normandy," and sister of its king, there had been much communication between the two nations. Let, however, the prick spur of Castle hill be of Saxon or Norman origin, either a hunter's, or a rad-knight's, it is immaterial to my history; except

* The Saxons it would appear used little cavalry; for it is said that the Earl of Hereford destroyed the efficiency of the Saxon troops by making them fight the Welsh on *horseback*, "against the custom of their country."

as a corroboration, that the ruins of the dwelling I have been attempting to describe, were not the home of a serf or ceorl, but of a knight. Still, Byron would have scouted the idea, that so elegant an instrument and one of such small girth could ever have been adapted for the heel of a splay-footed Saxon.

William had conquered at Hastings; but unmindful of the amnesty he had promised to the Saxon race, he harried them by his exactions, and the result was the great northern insurrections, which converted Amounderness into a desolation and laid "wasta" a portion of Leyland. To guard against such in future, he encouraged his barons to erect strongholds; so Roger de Poictou, in the interval between the conquest and the survey, built those of Lancaster and Liverpool, and probably a third at Penwortham on the Ribble; for no baron's name occurs in connection with it, before the defection of the superior lord; when it was granted by the Conqueror to a Bussel, the conjoint lord of the fief of Blackburnshire. The castle was ready for his reception, the Saxon Ham, after having afforded shelter, as the prick-spur manifests, to some knightly representative of the Saxon king, or visitor of the works, had disappeared at the time of the elevation of Castle hill; and the baronial residence of the Bussels is likewise now no more. Like the building that preceded it, its history will remain a blank, except some happy visit of a society, such as ours, disclose its foundations and the archives of its owners. It was, however, no vast structure. It could have been little more than a donjon keep, comfortless as a domicile, since every window was a shot hole, and air and light could not be admitted without inviting an enemy; but it was strong as a fortalice. It stood, I opine, on the ground now occupied by the church, and a military eye would at once fix on such a position, where two sides are protected by the river and its high cliffs. Besides, here rises the Castle hill to which it gave name, only separated from it by a ditch, said by Baines to have been "forty yards square." More fortunate than its subordinate one at Weeton, the site therefore of Penwortham's Norman stronghold has not entirely been lost. Moreover its early demolition will account for the little we know of it, and its total disappearance may be chiefly ascribed to the great slips of the river cliffs, which old documents assert were of frequent occurrence. The area therefore of the upper plateau, as well as the lower must have been larger and may have been the sites, with the keep between, of the outer and inner ballia. This is not a mere conjecture; though there are no

signs of ditch, or walls, with the exception of the one named, which appears only to have surrounded the keep. Grose's military antiquities contain a similar plan of a Norman fortalice and represent such an eminence as Castle hill, as being always, or nearly so, erected in the outer bailey, for a Court hill, or tribunal, where the baron, as high justiciar, executed justice. For this particular reason, and for a specula, the erectors of Penwortham's fortress had elevated and conically shaped the hill, so often referred to, by bisecting the butt end of the upper plateau with a ditch, and applying the sand and marl thrown out to accomplish the object they had in view. Of this we had occular proof, as well as how the elevation had been effected at two different times; for at some four or five feet from the present summit, at G. in figures 4 and 5, we cut through a thin viscous layer of black surface soil, on which some remains of a pavement were visible.

Castle hill then, in all probability, was the tribunal of Penwortham's baron, where *Ranulph, Earl of Chester, held his court, after he had received confirmation from Henry III. of the lands between the Ribble and Mersey, and succeeding mass and mesne lords their courts leet and baron, or as it is usually styled, the "King's Court,"—the Aula regis.† And it was no uncommon meeting place. The Constablewick of Garstang, to the date of 1816, issued its laws and regulations from Constable hill, on the Wyre. But Castle hill, we have seen, was more than this. The Mote hill of Warrington more nearly resembles it, seeing that different people in succession have occupied it, as remains declare; but the round hill near Cartmel, called Castle Head, approaches closer to it still. Here there were discovered about a half century ago,—"Parts of a human skull, vertebræ, &c., jaws of a large species of deer, teeth of buffaloes and other animals, tusks of a boar, &c., rings of silver, brass, and iron, beads of blue rag stone, lead and clay, 95 sticas of Northumbrian kings, 75 Roman coins, iron ore, petrified bone, pebbles, pottery and imitations of muscles." These, however, were not exhumed from the ruins of a dwelling. I find nothing to compare with Castle hill: it is unique, at least I know of no parallel.

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* Coucher Book in Duchy Office, n. 78.

† Tradition says, that a verdict of the Aula regis of Penwortham, not a century and a half ago, executed a criminal, but whether on Castle hill or in Hangsman's field I cannot learn.

ON RESEMBLANCE, IMITATION AND PLAGIARISM IN ENGLISH POETRY.

By David Buxton, Esq.

(Read 11th December, 1856.)

To descant, here, upon the pleasures to be derived from literary pursuits, would be to repeat, very unnecessarily, an oft-told tale. They are as various in kind, as they are inexhaustible in extent. Addressing minds of very different capacities, and influenced by very dissimilar tastes, Literature furnishes the requisite stimulus to the enquiries of each, and dispenses an appropriate reward to all. And still more, I think we may readily trace in ourselves the disposition and the habit to notice the different peculiarities of familiar authors, and even to note the various characteristic features of each individual writer, at different times, according to the temper of mind in which we read. Who amongst us is not conscious of these varying moods? Do we not sometimes dip into a favourite book, in the lazy temper which only wishes for amusement? and sometimes too, let us hope, with the worthier disposition which seeks the instruction which sound wisdom can afford, or the ennobling thoughts which the rapt poet can inspire? Are we not sometimes inclined to receive, implicitly, whatever the author lays down? and, anon, pugnaciously resolved to dispute every proposition he advances? In reading a good poet, I think we must, at times, find ourselves disposed to let our admiration rest chiefly upon the vigour of his conceptions; at other times, perhaps, upon his power of illustration; then, upon his force of expression; and again, upon his grace of diction, or melody of language. These are all so many claims upon our admiration, which works of the highest character irresistibly urge; and the fact that some particular merit seems to come more closely into view at one time than at another, arises solely from our own varying moods, which prompt us always to take the highest pleasure in that which, at the moment, is most congenial and accordant with themselves. The glorious

work which, in its completeness and greatness, commands our admiration, stands ever unchangeably the same; the soaring mountain which pierces the clouds with its summit, and glasses itself in the liquid depths below, remains as immutable as it is immovable; but its aspects of loveliness and grandeur change perpetually with the lights and shadows of the hour, and are presented in different phases as we change our point of view. So with the creations of human genius. We see their various features, at various times, because we observe from different points, and through the medium of different emotions. Yet, to every tone of human feeling they are faithfully respondent; answering now with tenderest sympathy; then with enkindling fervour; but always with unerring truth: almost infinite in their various modifications, yet exquisite in all. Whose writings, for instance, can in this respect be put in comparison with those of Shakspeare? What fun is more genial than his! what wisdom more profound! what pathos more touching,—what tragic terrors more sublime! what pictures of nature and of man so vivid and lifelike; what lines more musical; and what words more significant and apt, than may be found in almost prodigal abundance throughout his matchless works!

In a Paper which I had the honour to read before the Society two years ago,* there occurs the following passage:—"I do not pause to point out the resemblances which may be traced between many familiar passages in modern poetry, and some which are to be found in Cowley. *That* is a branch of literary investigation, which, if followed out, would reveal some curious facts. I hope some member of the Society having the requisite leisure may be induced to take up the subject, and bring his reading to bear upon it, in its threefold aspect of unconscious resemblance, avowed imitation, and arrant plagiarism." (p. 60.)

That friendly challenge, has, to my disappointment, not been taken up. It only remains, therefore, for me to attempt to do, what I would far rather have seen more efficiently done by abler hands. And here I must premise, that I shall limit myself to English Poetry alone. I do not propose to travel out of the domain of our own language. Our indebtedness to the poetry of the Classical and other tongues, is a matter of familiar knowledge to us all; but the subject is too wide to be entered upon now, and it is besides,

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* Cowley and the Poets of the Seventeenth Century, Transactions, vol. vii. p. 49.

beyond my power of handling. Nor shall I so much as touch upon one branch of the subject, which *does* lie within the limit I have now prescribed for myself, namely, the imitation or the appropriation of Scripture imagery and expression. If on the one hand, we may well rejoice that English poetry has derived so much of its beauty and power from the Book of Divine Inspiration; there is too much cause to deplore, on the other, that the kindling narratives and lofty precepts of the Sacred Volume have been so often degraded by unworthy paraphrase, and diluted in the wretched versions of pretentious rhymesters. When to our admiration of the matchless poetry of the Book, we add the profounder feelings with which we regard it as the revelation of God's Will to man, it seems to say to all who have ears to hear,—"put off thy shoes from off thy feet, for the place whereon thou standest is holy ground."

It cannot but be that this exclusion of the Classical, Foreign, and Scriptural elements from our enquiry, will very much lessen its scope; though I trust it will not be found to deprive it entirely of interest, nor even of some degree of profit.

The charge of plagiarism is one that is often made, against poetical and other writers;—not always, it must be confessed, without reason. But it is evident that there is a degree of resemblance, and even of imitation, which is perfectly allowable. There are no rights of property in thought. The floating fancy, or the profound speculation, is equally within the reach, (and therefore open to the appropriation) of all men similarly endowed; and a writer is not to be precluded from following out his own conception, because it happens to bring him upon ground which some predecessor or contemporary has trodden before him. When this is done with taste and judgment, it would be mere hypercriticism to condemn it. There are, also, avowed imitations, which give a zest and grace kindred to that which a happy quotation gives to a passage in prose. There are, besides, unconscious imitations, many of which it must have occurred to every attentive reader to notice, and some of which will come before us in the illustrations to be quoted hereafter. A rigid canon of exclusion would deprive our Literature of some of its chief ornaments. Many of our most eminent authors have purposely taken the plots and frame-work of other (sometimes inferior) writers, and made them their own. Chaucer, we know, took the idea of his *Canterbury Tales* from the *Decameron* of Boccaccio. Shakspeare appropriated dramas which he found ready to his hand, and turning them to

shapes which no other mind could have given them, sent them forth to endure, not for an age, but for all time. Sheridan, long afterwards, did the same; and so in one instance, did Coleridge. And these great writers I mention, not as standing alone in this matter, but because their fame has placed them before the world "in form and gesture proudly eminent." It is true that they did not refrain from touching the works of others; but it is equally true that they "touched nothing which they did not adorn."

There is another fact nearly connected with the subject under consideration, which may here be alluded to. The success of a particular author, or the popularity of a new style of composition, frequently begets imitators. There seems to be a fashion in the dress of human thought, which, like the more familiar *modes* of personal attire, is sometimes carried to a vicious extreme. Mackenzie's *Man of Feeling* was undoubtedly written in imitation of Sterne. The success of the Waverley Novels produced the Historical Romances of James, and others. When Bulwer chose a Highwayman for a Hero, he perhaps had little idea that *Paul Clifford* would prove the literary progenitor of *Oliver Twist*, or that Mr. Harrison Ainsworth would "better the instruction" of his master, by multiplying *ad nauseam* such books as *Rookwood* and *Jack Sheppard*. The sudden success which was achieved by Dickens under his pseudonyme of "Boz," brought into the field a host of other writers, who imitated the characteristic features of his style, and have not altogether failed to gain some reputation for their own merits. In poetry, there was, in the reign of Charles II., a French fashion. The court poets of the "Merry Monarch" drew more of their inspiration from Versailles than from Parnassus. Nearer to our own times, the German element has considerably influenced the poetry of this country. The legendary Ballads of Bürger and his contemporaries were imitated by Sir Walter Scott, and "Monk" Lewis. The loftier strains of German minstrelsy enkindled the poetic fire in Wordsworth, Coleridge, and other Bards of our own or the last generation. The irregular, and yet constant measure of *Christabel*, found admirers and imitators in Scott, Byron, and Rogers. The metre of the *Corsair* and *Jacqueline*, is clearly formed upon the model which Coleridge had furnished.

The particulars now adverted to, describe, I think, the whole field of permissive imitation or appropriation. Beyond this, it becomes plagiarism —literary theft.

Here, in the original paper, follow the examples which were adduced to illustrate the preceding remarks. These extracts, which extended to a very considerable length, I do not think it necessary to repeat. They would not only occupy too much space, where space is very valuable, but would in a measure defeat the object with which this paper was written —that of suggesting an interesting subject of literary investigation, and leaving it to others to pursue.

I will content myself by giving some of the illustrations from Cowley, only. These will afford a sufficient specimen of the manner in which the subject was treated, and will also furnish some details supplementary to the Paper already referred to, concerning one of our native poets, who is less familiarly known than others whose names will follow.

I take the first extract from one of his amatory poems: —

"How could it be so fair, and you away?
How could the trees be beauteous, flowers so gay?
Could they remember but last year
How you did them, they you delight,
The sprouting leaves which saw you here,
And call'd their fellows to the sight,
Would, looking round for the same sight in vain,
Creep back into their silent barks again."

There are thousands of readers who never saw this passage in Cowley, who have been made perfectly familiar with the idea which it embodies by those well-known lines of Burns, beginning, "Ye banks and braes o' bonny Doon."

In the first poem of the collection entitled, "The Mistress," Cowley thus sings :—

"Strike deep thy burning arrows in:
Lukewarmness I account a sin,
As great in love as in religion.
Come arm'd with flames, for I would prove,
All the extremities of mighty love,
Th' excess of heat is but a fable;
We know the torrid zone is now found habitable."

Among the contemporaries of Cowley, though an older man, was Thomas Carew. He died at the age of fifty, when Cowley had barely

attained the age of twenty-one. To the elder writer may therefore be fairly conceded the credit of having been the originator of the thought or conceit which is common both to the passage just quoted, and the one which follows, from Carew's well-known song :—

> Give me more love, or more disdain ;
> The torrid, or the frigid zone,
> Brings equal ease unto my pain :
> The temperate affords me none :
> Either extreme of love or hate
> Is better than a calm estate."

Perhaps there is no couplet in our language more frequently quoted, either for approbation or reprobation, than this of Pope's :—

> "For modes of faith let graceless zealots fight,
> His can't be wrong whose life is in the right."

The original of this is in Cowley. In his verses on the death of his friend and brother-poet, Richard Crashaw, who had left the Church of England, and died in the communion of the Church of Rome, he says :—

> "His faith, perhaps, in some nice tenents might
> Be wrong : his life I'm sure was in the right."

In the *Davideis* is an expression which has been used by several subsequent writers :—

> "Nothing there is to *come*, and nothing past,
> But an eternal NOW does always last."

I think I remember the same thought in Southey's *Thalaba* :—

> "An everlasting NOW of misery."

And in Talfourd's *Athenian Captive*, we have—

> "No ! 'tis not past ! the murderer has no PAST ;
> But one eternal PRESENT."

In *The Wish*, by Cowley, the following is the concluding verse :—

> "How happy here should I
> And one dear she live, and embracing die ;
> She who is all the world, and can exclude
> In desarts solitude,

I should have then this only fear,
Lest men, when they my pleasures see,
Should hither throng, to live like me,
And so make a city here."

Now, while retrospectively this reminds us of the description of Una, in his favourite Spenser, "whose angel's face," did make "a sunshine in a shady place;" it has had imitators in the nineteenth century. Do you remember that passage near the end of *Childe Harold*, beginning,

"O that the desert were my dwelling place,
With one fair spirit for my minister."

And can we not trace the same thought in that pretty verse of Moore's, in his *Loves of the Angels*:—

"Throughout creation he but knew
Two separate worlds: the one—that small
Beloved and consecrated spot
Where Leah *was:* the other—all
The dull wide waste where she *was not.*"

[The further illustrations included quotations from Shakspeare, Spenser, Donne, Southwell, George Herbert, Milton, Flatman, Bishops Jeremy Taylor and Ken, John Bunyan, Katharine Philips, Norris of Bemerton, Pope, Cowper, Burns, Goldsmith, Blair, Campbell, Coleridge, Southey, Moore, Byron, Talfourd, and P. J. Bailey. These however, for the reasons already given, I pass by. It is not by any means to be supposed that the field of enquiry was exhausted by the extracts which were read.]

Thus we have gone over and surveyed a large space in our National Literature, but omitting, purposely, all reference to any other poetry than our own. We have seen that, in some instances, the resemblance is rather in sound than in sense; in others, that it is in sense more than in sound; in some few, that the appropriation extends to both these; that, occasionally, the same simile is employed to illustrate a different subject: and again, that the same subject is embellished by a different metaphor. If we had gone into a lower rank of the literary profession, and instituted our right of search into Grub Street, we should have found, too probably, stolen property in abundance. Poets, like bees, have all the garden before them; it blooms with flowers to which they are all heartily and equally welcome, but the honey which they offer for our enjoyment should at least be their own.

After all, it may be said, and most truly, that these little things are of little value. They are simply curious. No man should read with the direct object of discovering them: that would be, indeed, to traverse a beautiful scene with the mind and views of a detective policeman, intent only upon the disclosure of some dishonest act, and therefore blind to the manifold beauties which smile everywhere around.

But if little can be said for the profitableness of this sort of investigation, it is, at least, curious and interesting; it shows how the material of thought is variously operated upon in that wondrous crucible—the human mind; and as we con over these curious results, we may justifiably think, that though they are not worth much trouble in seeking, they are among the things which, "when found," may, as Captain Cuttle advises, be "made a note of."

THE FAUSSETT MUSEUM, AS AFFORDING MATERIALS FOR HISTORY.

By John Robson, M.D., Warrington.

(Read 2nd April, 1857.)

About the middle of the last century, two gentlemen were closely searching into the antiquities of their own neighbourhoods. Both were clergymen of the Church of England, both were men of learning, and they were alike eager in the pursuit of knowledge; but the results of their labours have been widely different. The Rev. John Whitaker, a native of Manchester, related the history of Lancashire and Cheshire with much minuteness of detail. The wars and alliances of our predecessors on both sides of the Mersey, for some centuries before Christ, and the foundation of Manchester about the period when Cæsar landed in Kent, are told at great length, and leave nothing to be desired but evidence of the facts. He quotes largely from Richard of Cirencester, and Ossian is a great authority with him; and his History, which obtained a good word from Gibbon, was a sort of store-house for succeeding writers. With an abundant fancy, and no want of erudition, he attempted to realize the events of that early period, and the slightest hint, even a misapplied inscription, was sufficient to enable him to sketch out an invasion and a conquest, with all its accompaniments and consequences.

But time, the avenger, has had his turn, and Mr. Whitaker's attempts to bring back the past are themselves being forgotten. His work is shown to be a mere romance; his Roman stations, his own cherished discoveries, to have been mere dreams; the conclusions which he came to, with reference to acknowledged sites, altogether erroneous; and the two first Books of the History of Manchester utterly false in principle, and not to be trusted in details.

Mr. Whitaker and the Rev. Brian Faussett do not appear to have had any communication together, nor indeed is it likely that they had any knowledge of each other. In those days there was no great facility for knowing what was doing in distant parts of the kingdom, and Mr. Faussett

seems to have followed out his own plan in his own way, and by himself. His mind and Whitaker's were essentially different. If he had any power of fancy, he took care to keep it well under. He thought at first that the burial-places were the sites of battles in the time of the Romans, but he soon found out his mistake, and it seems to have been a lesson for him ever after. When he found a something he could not make out, he provisionally called it a "whistle;" but when more specimens turned up, he referred back to his first assumption, and candidly owned it was "most likely nothing of the sort, only there was no harm in guessing." Mr. Faussett's Journal, written nearly a century ago, is now as valuable as it was then, nay, even more so; for if it had been published at the same time as Whitaker's History, it would probably have gained little notice, and been left to neglect as a dull collection of trifling matters, when compared with its brilliant rival.

It is indeed fortunate that the Journal has been printed, and the Museum thrown open to the world at the present time,—the very period that Faussett, who was far before the Archæologists of his own age, would have chosen. His treasures now can not only be appreciated, but applied to the illustration of history, and do in fact form materials whose importance is best known to those who have paid most attention to it. The evidence they afford of the state of Kent for many generations is unimpeachable. They show that the condition of the people must have been tolerably prosperous, and that they have gone down to the grave in peace. They prove that Roman art and taste had influenced their personal ornaments, though there is nothing to lead to the conclusion that Mr. Faussett found the grave of a single Roman; and while a few Christian emblems have been turned up, they are only enough to convince us that the great mass of interments were not Christian at all.

I believe these general conclusions may be safely drawn, but we must review with more detail the facts upon which they rest; and as there is some diversity of opinion as to the real age of the cemeteries, it will be necessary for me to report to you these discrepancies, and then place the facts and evidence before you, requesting you to bear in mind the difficulty, and, at the same time, the importance of the inquiry.

Faussett, in his account of Kingston Down, where he found some of his best relics, and where he catalogues the opening of 308 graves, says, "For

I think this spot will from thence appear to have been no other than a common burying-place of Romans, no doubt (and that, too, from a very early period), but not of these alone, but also, if not chiefly, of Romans Britonized, and Britons Romanized (if I may be allowed the use of these expressions), till long after the Romans, properly so called, had entirely quitted the island."*

And again in his introduction to his Journal of the excavations at Sibertswold Down, where he opened 181 tumuli, after stating that his previous opinion was, that the place had been the site of a battle, that the graves were those of the slain, and that he was confirmed in this by the discovery of what he supposed to be a Danish spur, he goes on—"but upon trial I was soon convinced of my mistake. For though I this summer opened no less than 168 of these tumuli, and the whole of those in Barfriston adjoining, to the number of forty-eight more, yet not a single spur or anything else occurred that seemed to have the least connection with either Danes or Saxons. But everything we met with was much of the same kind with what I found at Ash and Kingston * * * and I make no scruple of declaring myself to be confident that the persons here buried were neither more nor less than the peaceable inhabitants of the nigh village or villages, which inhabitants I take to have been Romans Britonized, or Britons Romanized; that is, as I have said before, people of both these nations, who, having in process of time intermarried with each other, had become, as it were, one people, and had naturally learned and adopted each other's customs and ceremonies."†

And with reference to the graves at Kingston, he concludes "that it might have continued to be a burying-ground after the arrival of the Saxons in this isle; nay, perhaps even to the time when Archbishop Cuthbert (who came to the see of Canterbury A.D. 741), obtained a dispensation from the then Pope for the making of cemeteries or churchyards within towns or cities, whereas, here, in England, until his time, within the walls thereof none were buried."‡

At Beakesbourne he "guessed that the persons here deposited were buried about, if not long before, the time that the Roman legions left this island for the last time, namely, about the year of Christ 418, or at the latest before the coming in of the Saxons, which was about the year of

* Invent. Sepulcr. p. 37. † Ibid p. 102. ‡ Quoting Weever's Fun. Mon.—Ibid 38.

Christ 449." But he says it might have been used as a burial-ground long before, as well as long after those periods, and he is persuaded there is nothing Saxon about the place.*

Mr. Roach Smith, in his Introduction, takes quite another view. After the evacuation of the island by the Romans, he says, "When the light of history dawns again upon the mysterious drama, it is fitful and uncertain; but when the curtain, or shroud rather, is raised, we see upon the stage a mighty change. A new people has occupied the land. * * * But of the precise time when the great advent commenced, and when completed, the traditions, which under the name of history have descended to us, leave us in doubt."†

"Had he (Mr. Faussett) been previously acquainted with the characteristics of Roman and Romano-British remains, he would probably have at once surmised that the weapons, the implements, and the ornaments, unaccompanied by indications of contemporary cremation, must have belonged to a time subsequent to that to which he referred them."‡

In another place he more particularly states that these cemeteries cannot be referred to a period anterior to the fifth century, and therefore the earlier Roman coins can afford no evidence as to the date of interment.‖

One more extract from Mr. Smith's learned and elaborate introduction is of the very first importance. "As we often find the cemeteries are contiguous to, or surrounded by Roman or Romano-British burial-places, we seem to discern, in the contiguity of the dead, the result of an amicable relationship. In many places, where opportunity has been afforded of watching the exhumation of Roman burial-places, it has not been unfrequently noticed, when the Roman interments have been exhausted, that Saxon graves follow in close proximity." This has been noticed especially in the neighbourhood of towns, as at Stroud and Colchester, and remarkably at Crundale.

We may remark that both Mr. Faussett and Mr. Smith are satisfied that the graves were those of one people; the one considering them as British or Celtic, and dating them before, the other after the middle of the fifth century. It does indeed seem impossible to believe that these burials belonged to such a terrible period as the end of the fifth and beginning of

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* Ibid p. 146. † p. 11. ‡ p. 18. ‖ p. 48.

the sixth century must have been, if the common opinion of the Saxon invasion be correct. The destruction of a race implies such suffering on the one side, and such barbarity on the other, that funerals like these could not have taken place. Still there were the coins of the fifth and sixth centuries, which Faussett ignores, and the crosses, which Mr. Smith can only receive as personal ornaments, not as Christian symbols; besides the strong probability that the Saxons on the continent, at that period, used cremation; and there are, moreover, certain admissions by both gentlemen, which we shall use to show that the whole truth does not rest with either.

Since the publication of the INVENTORIUM SEPULCRALE, we have had a review of it by the learned and eloquent author of "The Saxons in England." Mr. Kemble's views are altogether different. He says, "it is impossible to doubt that the elaborate ornaments, the improved pottery, the buried skeletons of the Kentish grave-yards, mark a much more advanced development of culture, and probably a much later period of time than the rude evidences of cremation in Norfolk and Suffolk. * * * The Kentish deposits remind us rather of the settled districts under Frankish rule, and the Merovingian culture of North France, Germanic, indeed, but modified by Roman models, and the adoption of the Christian Faith. * * * There is in fact nothing in these interments inconsistent with the supposition that they belong to the period extending from the commencement of the seventh till at least the first half of the ninth centuries."*

Mr. Smith speaks of the intimate connection of the Roman and Saxon graves, forgetting the British or Celtic of the first half of the fifth century; and Mr. Kemble puts aside not only these, but the Heathen Saxons of the fifth and sixth centuries, and starts at once from the Christian period; so that we must suppose the Christian Saxons of the seventh century again went back to cemeteries, which had been disused for at least two hundred years. It may be supposed, that as most of the bodies are laid east and west, they must have been Christian; but, from the numerous exceptions, we cannot place much reliance on this circumstance. In a cemetery, too, which has lately been discovered at Hartlepool, and supposed to be of the seventh century, the bodies are laid north and south, but the grave-stones are sculptured with Christian emblems.†

* Arch. Journ. Sept., 1856, p. 299. † Arch. Journ. vi., 136.

In fact, that these graves were not those of a Christian population is evident from the want of the marks and symbols which exist in every Christian cemetery, and from the repugnance which the faithful, at that period, had to rest in ground which must, in their eyes, have been especially devoted to the devil. We know that very soon after the arrival of St. Augustine, churchyards were common burial places; and if the old cemeteries were anywhere in use, we may be sure that if churches were not built upon them, crosses would be erected; nor, indeed, is it at all probable that the memory of a Christian burial ground would ever have been lost. But when Mr. Kemble asserts the resemblance between the Kentish relics and the Frankish under Merovingian rule, he puts the question on its right basis. The Saxons in England had then as settled a government as North France, and Roman influence was acting upon the former as much as on the latter; perhaps one nation was as much Christian as the other.

The agreement of these three archæologists, that the graves belonged to one race, and to a civilized and settled community, is important, as enabling us to start from a sure point, and with something to guide us on our way. For, except a few coins, nothing has been found that gives us any clue to the chronology of the deposits; and hence the remarkable difference between the three gentlemen; Mr. Faussett assigning the second, third, and fourth centuries; Mr. Smith the fifth and sixth; and Mr. Kemble the seventh, eighth, and the first half of the ninth, for the period in question.

It will be well to observe that the terms Roman occupation, Roman interment, and such like, are used with great latitude, and it is desirable that the reason or fact upon which the name is assigned should be clearly given. The graves at Crundale are (many of them at least) by universal consent said to be Roman, but that the bodies there deposited were those of actual Romans, or even Italians, there is nothing to show. The number of Roman soldiers, officials, and settlers here must have been, comparatively, very small. The Legions, if always kept to their full complement, would not have been more than 18,000 men, which were principally distributed in the north; and it must be remembered that a large proportion of these, though Roman citizens, were really provincials, from many parts of their great empire. Where a Legionary was buried, however, we find the fact recorded on inscribed stones, wherever Roman garrisons were

established. Besides those natives who obtained the citizenship, we have also the civil officers employed by the government in the collection of taxes, the superintendence of the post stations, and other departments, who were scattered over the country; and it would probably be through these last classes that the Imperial civilization would chiefly be promoted. Kent is always named as the most advanced part of England, and this would naturally follow from its continual intercourse with the continent and with the Roman officials. It had, from a very early period, two or three garrisons, though of no great extent, and there were other towns connected with the post stations, which may have been centres of trade and manufactures. Still, the body of the people were of the genuine Kentish stock; they were, to use Faussett's expression, Romanized Britons; they adopted the manners of their conquerors, used their pottery (a great advance in civilization), copied their personal ornaments, and had similar modes of burying the dead. But as far as Mr. Faussett's researches go, and indeed the later ones too, there is no direct proof, even at Crundale, that a single Roman was ever interred in any of these cemeteries. Not an inscription nor symbol, nor sign of any sort has been found, to identify any remains as those of a veritable Roman man or woman, while everything tends to show that the mass of the people had become, in certain respects, Romanized.*

The influence of Roman art on everything that has any character at all, is confessed on all hands; but when we consider that according to the received history, the Romans had left the country fifty years before the arrival of the Saxons, the influence would be in fact that of the original inhabitants, and as the conquerors must have set about their work of extermination immediately, I must confess I can see neither time nor

* We are here especially referring to the researches that have been made in Kent, by Mr. Faussett and others, but there is one relic in the Museum, of the discovery of which, unfortunately, we have no account, but which is said to have come from Norfolk. This is a genuine Roman cinerary urn, of a tasteless shape, badly made of coarse clay, with a very rude ornamentation; in fact, it would be classed, at first sight perhaps, as very late and poor Saxon. But this urn has an inscription upon it, *to the manes of Melia Rufina, who lived thirteen years, three months, and six days.* The letters are without ligatures or contractions, and apparently of a much earlier date than the urn itself would indicate, if we did not take into account that both coarse and fine pottery would be made and used at the same time, and that when the poverty of a family did not allow it to get the more costly, it had to make use of the commoner and cheaper ware. The antiquity of this inscription has been doubted, but the late Mr. Kemble expressed his belief in its being genuine, and intended to have written an account of it.

opportunity for any such influence showing itself at all. It could only have been exercised during the period when the Roman power was in existence and in active operation. After a few generations we look in vain for traces of it in the coins, in the buildings, or in the personal ornaments. Even the pottery, almost a necessary of life, seems to have gradually become more rude and useless, and to have been no longer made for domestic purposes. This fact defines pretty nearly the period of one part of the interments, while the others are limited by the absence of Christian memorials.

But another point of great importance is also undisputed, viz., that these interments took place in a country which was peaceful and settled. That generation followed generation is evident, not merely from the extent of the burial-grounds, but from the fact that the custom of cremation had actually ceased during the period. When this took place I am unable to say, but most likely burials had been growing more prevalent in the second and third centuries. There can be no question, however, that few bodies were burnt after the empire became Christian, under Constantine, and not the least proof or probability that the Kentish men re-adopted it when they regained their independence.*

The epoch of 449, the so-called arrival of the Saxons, is in the way of both Mr. Faussett and Mr. Smith; one takes the anterior, the other prefers the century that follows; while both allow that interments have taken place out of the period which each assigns as definitive in his own hypothesis. Mr. Kemble's views are quite in another direction, but his position is altogether untenable, and has no support from any investigations that have been made; indeed, as I have already shown, it is at variance with all the facts that have been brought to light. That these cemeteries should have been the work of the Christians of the seventh and eighth centuries, and neither symbol, nor inscription, nor tradition remain in any one of the many localities, is quite at variance with all that we know of the state of Christianity as then existing.

The pottery which has been found in many graves was probably used in the funeral ceremonies, and consequently dedicated to the gods of the tomb; no sure inference can be drawn from its pattern or material as to

* Urendi corpora defunctorum usus nostro sæculo nullus fit. Macrobius, Saturn. 7, 7. It would seem that it had ceased in the time of Apuleius, in the second century, amongst the common people.

the date of the interment. We must bear in mind that common pottery retains its form and character through many ages, and that the brown ware of the present day is coeval with the richest and most delicate porcelain. The ancient manufacture in this kingdom was of a very simple kind, and may be classed under two heads; 1st, that bearing more or less a classical character; and, 2nd, that where there is no characteristic of any kind. A vessel of clay was wanted, and it was made with a wide mouth, or a narrow neck, and a round, or flat, or conical base, with patterns showing more or less skill (or more correctly, various degrees of unskilfulness) indented on the soft clay, and indifferently baked. Where the Roman influence prevailed, however, we have more graceful forms and in greater variety; good mouldings, well burnt ware, and a sort of glaze, which has stood well for many centuries. But it would be hardly safe to assign a date, even in approximation, on the strength of these differences, as undoubtedly all kinds would be in use at the same time, marking, as they do now, the comparative wealth of the several owners. One thing we may believe certain; pottery, for domestic purposes, was exclusively a Roman introduction; with them it came, with them it went; and as, probably, a good deal of the finer sorts was imported, we have evidence of extensive commercial intercourse. As to that made in the kingdom, the clay would vary according to the locality, and particular fashions and modes of workmanship would no doubt prevail in different places; but the original rudeness and simplicity continued as long as the manufacture lasted; which, indeed, does not seem to have long survived the departure of the Romans. Whether we possess any made after the sixth century it is difficult to say. The cups, before the conquest, were of wood, horn, shell, and metals, and if there were any utensils of glass or pottery, they must have been extremely rare.

The coins discovered have been few (Faussett names fourteen Roman, two Merovingian, and a few Saxon), and though of little value as evidence in any individual case, still, as a rule, I think we may presume that a coin found in a grave is to be taken as marking within a few years the date of the grave. There is more uncertainty in some of Mr. Faussett's examples, as in several cases a previous urn-burial was found to have been disturbed by the later deposit of a body unburned, and there is a doubt to which interment the coin belonged. It is possible, too, that the coin might be strung with beads or worn as an ornament. Still, on the whole, I am inclined to believe that they were not only of the period of the burial, but

intended by the survivors as a memorial of the date itself, on the same principle as we still place the current coin of the realm under the foundation-stone of a public building. The coins are chiefly of the third and fourth centuries; specimens of the fifth and sixth are also met with, but not one that can be with certainty assigned to a later period.

The crosses are equally uncertain as to age; three only were found. One, a silver Latin cross, worked with an engraved guilloche pattern, and in another grave a pair of small Greek crosses, also of silver. At whatever period Christianity was introduced into the island, and I believe it took place during the apostolic age, it must have been the state religion for nearly the last hundred years of the Roman dominion; but, as I have stated on a previous occasion, it seems to have made slow progress with the Teutonic races in general, and the *Sexe* and *Engle* in particular. That there were converts, however, at an early period we have presumptive evidence, and these crosses are themselves proofs of the fact; they appear to have been attached to some part of the dress, not suspended. That this Latin cross could have been worn as a mere personal ornament, apart from its symbolical meaning, seems as unlikely as that we should now adorn ourselves with silver gibbets. The cross itself may have belonged to the occupant of the tomb, and have been deposited at any period, from the Roman conquest to the end of the sixth century; or it may have been placed by some friendly hand, who had faith in the sign, that it might "scare the fiends from the heathen's grave."

We come now to the personal ornaments, the beads, buckles, brooches, rings, and bracelets; and while most of these are of a very simple character, such as we might expect any man working in metals would make, some are most magnificent and costly; others, less intrinsically valuable, have a remarkable and elaborate ornamentation, by some qualified as Saxon, by others as Roman, while there is no positive criterion by which to form a judgment. In Mr. Mayer's Museum you will find fibulæ apparently of exactly similar construction, especially as regards the security of the fastening, and with the same patterns of ornament, assigned to both classes. The bow-shaped fibulæ are sometimes wrought in a scroll or interlaced pattern, at other times we find small circles with a dot in the middle, regularly arranged; or we may have merely straight longitudinal ribs and hollows; and some of these forms we find upon the pottery, especially the small circle with the centre dot.

The very classification of these fibulæ into late Roman and early Saxon, shows the difficulty of appropriating such articles to the right owners, and it is most remarkable that nothing is said about the original Celtic race, which, according to the common belief, must have formed the mass of the population in the fourth and first-half-of-the-fifth century. Mr. Smith, in his very interesting work on Richborough, says that "the Roman coins, urns, and other objects of Roman fabrication, sometimes found with Saxon remains, do not prove an earlier date; but they tend to show that the Saxons adopted many of the Roman customs and observances after the Roman forces were withdrawn from Britain." * But this influence could only have been derived from the native Kentish stock, for the Romans had already left them; and it necessarily follows, if they, the native race, had learned aught from the Romans, we should expect to find some memorials left of them. If, however, they had not had the benefit of Roman art, or not profited by it, they could have done nothing for the Saxons. But Mr. Smith further tells us that "the connection between the workmanship of the latest Roman and the earliest Saxon personal ornaments, is often so close that it is difficult to distinguish between the two."†

The difficulties connected with the received history derived from the imperfections and contradictions of the writers of the fifth and succeeding centuries, are increased by the irreconcileable evidence of these remains. "The objects found in them," says Mr. Smith, speaking of these burial places, "are not only frequently of Roman origin, but they show, in many instances, that Roman habits and customs had been adopted and associated with those of the new inhabitants, to an extent which must considerably modify our assent to the popular belief that the Saxon invasion either exterminated the Roman monuments or the influence of Roman civilization." ‡

But if the population, or any part of it, was Celtic (and by Celtic I mean Welsh), it was itself utterly exterminated, and the language annihilated, even to the names of places and estates, which, notwithstanding all attempts to give them a Celtic origin, are clearly and indisputably Teutonic. Nothing, indeed, is more singular than the total oblivion of any people except Romans and Saxons, not merely in Kent, but in England, during the whole period from the second to the seventh century—the Engle, a cognate race with the Sexe, || appearing towards the latter half

* p. 57. † p. 88. ‡ p. 159. || Sexe, Latinized into Saxones, and coming to us through this Latinized form.

of the time. Granting, however, that the people of England proper were of the Teutonic race, the difficulties vanish, and all becomes reasonable and intelligible. The assertion of the national independence, the struggles between the great political parties for freedom on one side, and for power on the other, continuing through several centuries, and even, I believe, mixing themselves up with the Danish occupation in the tenth and eleventh centuries, take a definite form, and though a regular historical narrative is impossible, we may understand the various parties, their objects, and the means used in striving for those objects.

Amongst the general conclusions we may draw from the relics and the Inventorium, we have before observed, that there have been cinerary urns deposited long before the burial of the unburned corpses, and the urn has been either unknown or unheeded by the later generation. It is found broken, but the fragments appear to have been carefully gathered together, and deposited again in the grave.

There seems to have been no particular portion of ground assigned to the rich or poor, as the graves where the gold brooches were found had nothing to distinguish them, either in position or structure, from those which contained merely a buckle, the head of a dart, or nothing at all; the green sod covered all alike, and we have a specimen of that feeling of equality which formed so remarkable a characteristic of our ancestors. Neither do the arrangements differ at different periods of time; generation was deposited after generation with the same forms and the same relics.

The coins found are so few as to be plainly exceptional deposits. They are mostly of the lower empire, and I think must be referred to the Roman period, or, in the later instances, to persons who had the same religion and ceremonies. Roman coins were in circulation after the Romans left the kingdom; but that Saxons just arrived from the Continent (to say nothing of the Continental Saxons of that period still using cremation), would deposit a piece of money with each corpse seems very improbable. Both these and the Roman keys, chatelains, and similar articles, could hardly be supposed to be used by a people who must have begun and kept up a work of destruction and extermination, instead of adopting the manners and manufactures of the Kentish people.

The crosses serve to show that Christianity was not altogether unknown. Fragments and traces of linen and woollen cloth and leather were also found.

An opinion may be formed from these graves as to the condition of the people. The principal part seems to have been coffinless; a shield of wood, with an iron boss in the centre, fixed with broad-headed silver-gilt nails, a spear, a dart, a sword, and a knife,—such are the contents of the richest male graves, and they are rare. Generally a spear or dart, or knife and iron buckle may have turned up, but very frequently indeed the result was nothing. In the female graves we have beads of amber or glass, or coloured pastes, chatelaines, shears, rings, and armlets. The valuable gold brooches belonged to men; some of the rings are silver, but, except the brooches, there is nothing of much intrinsic value. In all these articles, however, the influence of Roman art is undoubted. If not the work of Roman artists, they are, at any rate, of the Roman school. The same may be said of the pottery; the bright red ware, known as Samian, is supposed to have been imported, while the common brown, black, or grey vessels were in all probability made in this country. But, as I have already stated, the actual manufactory does not seem to have long survived the recovery of the national independence. If the Saxons had brought over any such art from the Continent, we might reasonably expect that the superior work of the natives would have had a beneficial effect upon the pottery, and that at least it would have continued available for domestic purposes, but of this we find no traces.

I have already stated that the reason of so many earthenware vessels being deposited in the graves probably arose from the custom of bathing and anointing a corpse before burial. Some were used for libations and the funeral feast, and all things connected with it were held sacred, and devoted *Diis Manibus*. How far the Kentish people adopted these practices we do not know, but something of the sort seems to have been prevalent, if not going to the extent of a regular Roman funeral; a great deal would depend upon the wealth and position of the deceased.

We may, I think, now agree with Faussett, in assigning these graves to the inhabitants of the neighbouring villages, who continued to bury their dead in these cemeteries long after the Romans left the island, and even, till the establishment of Christianity. We may also see, with Mr. Smith, in the contiguity of the Roman and Romano-British burial-places, the result of an amicable relationship. In fact, we have here the proof that the Kentish people, who listened to St. Augustine, were as much the

descendants of those who opposed the landing of Julius Cæsar as the present inhabitants are descendants of those who received St. Augustine. The Romans * did not leave Kent of their own accord, they were driven out. The Saxons did not come from the Continent and annihilate the previous possessors; the Sexe were the original dwellers in, and owners of the land, distinguishing themselves as Cantwara, and around them were the remainder of the family, classified as East, Middle, South, and West Sexe. To the north was another great Teutonic or Gothic family, the Engle, which finally, but at a very early period, gave its name to the island, as the land of the Engle.

In conclusion, perhaps I may be allowed to put a question to the Historic Society. Are there no remains of the inhabitants of the two counties whose early condition and fortunes should be the peculiar object of our search, contemporary with those in Kent? Several tumuli have been opened or removed at Winwick; others, whose history I am altogether unacquainted with, are in Dunham Park. Delamere Forest also has been the site of an early cemetery, and there are remains on the fells in Furness that have never been examined. From what was stated here not long ago, the borders of Lancashire and Yorkshire might perhaps afford a good harvest to an industrious and careful inquirer. Every year adds to the discovery and destruction of these valuable relics, and it is to societies like our own that we must trust for preserving and making them available to future historians.

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* We get chance glimpses, at times, of the state of a city or nation under the Roman government, which are beyond price, as they are applicable to other places in like circumstances. The early history of Cologne is especially suggestive. This city was remarkable as a German town in the time of Cæsar; at a later period it became a Roman Colony, which implies as complete a Roman organization as was possible. In the Vitellian wars (A.D. 71) it revolted, and a tribe from the opposite bank of the Rhine sent ambassadors to the Town Council, thanking the national Deities, that they had again returned into the Germanic family and name, and entreating them to destroy the walls of the Colony—a mere safeguard of slaves: and to kill all the Romans in their district. The Council in reply, consider it safer to preserve the walls, and as the colonists had been joined with them in marriage, they think that their neighbours could hardly wish them to murder their own parents, brothers, and children.—*Tacitus Hist. IV.*, 64, 65. Cologne at that early period was essentially German in race, though Romanized even more than our own Kentish peasants.

ON SOME FOSSIL TREES RECENTLY DISCOVERED AT BURNLEY.

By T. T. Wilkinson, F.R.A.S., &c., &c.

(Read 18th December, 1856.)

Discoveries of fossil trees are always interesting to Geologists. They speak to them of a state of things respecting which history is silent; and of myriads of years gone by which set calculation at defiance. The luxuriant Flora which such remains indicate afford a constant theme for their speculations; and although there may be much of reverie in the results of such musings, the importance of the subject can scarcely be overlooked by the more practical portion of mankind, since it has laid the foundation of all the sources of wealth consequent upon the existence and magnitude of the Carboniferous strata of our globe.

In the earlier stages of the science of Geology, for such I presume it must now be considered, such discoveries as those to which allusion has been made, may have been regarded with more attention than they are at present. Their true positions in the classification of the Flora of the period have been in a great degree fully ascertained; most of the charateristic features of such vegetation may be considered as settled; and the nature of the climate in which it grew and flourished so abundantly is no longer matter of conjecture. The arrangement of the fruit and leaves which have adorned the massive branches may still be subject to some slight modifications; but since the connexion between the trunks and their roots has been fully determined the value of fossil trees has been much diminished; yet notwithstanding this diminution they still possess sufficient attractions to warrant a description whenever found, since they furnish us with indications of the extent of those dense old-world forests, which have played so important a part in the enterprise of the present generation.

It is now well known that fossil trees exist in most of the coal measures of Lancashire and elsewhere. They have been found standing erect at Dixon Fold, near Manchester; in the Victoria Mine at Dukinfield,

where their roots have been traced some 18 or 20 feet amongst the shale; and at Wolverhampton they are so numerous as to present the appearance of a fir wood cut down to the stumps. In the Newcastle coal field erect stems are found 150 feet below the present surface. They are also met with at Claycross, near Chesterfield; at Craigleith, near Edinburgh; at St. Etienne, near Lyons; and occasionally other forests, more ancient still, are indicated by the existence of tiers of stems each several yards beneath the upper trunks. A petrified forest occurs at Portland where the roots of the trees still remain in the vegetable soil, whilst their trunks pierce the limestone above. Other trees have been found erect on the coast of Northumberland. In the Derwent mines they are very abundant; and in all the coal measures of any extent they may always be met with upon due examination. Sir Charles Lyell notices their occurrence in Nova Scotia. He says, "The trunks are hollow cylinders, filled with sand and clay, and Calamites abound both here and at Pictou, affording proof that the trees have not been drifted from other localities, as was supposed by some of our earlier geologists."

The determination of the real nature of such remains appears to be due to the late Mr. Bowman, of Manchester; for after a lengthened discussion on the fossil trees found at Dixon Fold, he concludes:—

1. "That they were solid, hard-wooded trees."

2. "That they originally grew and died on the identical spots where they are now found interred."

3. "That they have become hollow from the decay of their wood by natural causes still in operation in tropical climates, and have been subsequently filled with foreign inorganic matter, precipitated as a sediment from water."—*Trans. Manch. Geol. Society, Vol. I. pp.* 112–140.

Mr. Bowman's views were shared by E. W. Binney, Esq., F.R.S., also of Manchester, and by geologists generally, who further hold that the vegetation of the coal measures was aquatic, and that the water was probably salt. Mr. Binney also agrees with M. Adolphe Brogniart, and others, who have been led to conclude that Stigmariæ are in reality only the roots of Sigillariæ, and he figures a specimen in the *Memoirs of the Manchester Philosophical Society, Vol. VIII. p.* 179, from the Dukinfield mine, which proves the point almost beyond dispute. More recently, however, all possibility of doubt has been removed "by the discovery at St. Helens,

near Liverpool, in coal strata, of an upright trunk of a Sigillariæ, nine feet high, with its roots eight or nine feet in length, still attached in their natural position. These roots are undoubted *Stigmariæ ficoides*, and the radicles, formerly considered as leaves, spread out in all directions to the extent of several feet."—*(Mantell's Medals of Creation, Vol. I. pp.* 143–4.*)*

Sigillariæ, Stigmariæ, Lepidodendra, Calamites, and Ferns, abound in the coal measures at Burnley. Large masses of black shale are often found, which when examined are wholly composed of leaves, fruit, &c., together with other remains of a former surface. In the mines near Dunoakshaw, a species of charcoal is plentifully mixed with the coal strata which still bears the impress of the woody vegetation from which it has evidently been formed.

But by far the most interesting discovery in this locality was made in 1853, when a considerable number of fossil trees were found when excavating for the lower floors of Mr. Dixon's cotton mill, near the Hall Inn, Burnley. They were situated at a depth of about twenty-five feet from the surface of the present street, in the front of the cliff which overhangs the river Brun at this place. About fifteen fine trunks were met with by the workmen, in a space measuring 70 feet by 30, and lay in a direction from east to west in the excavation. The surrounding depositions of strata appear to have taken place uniformly, and most probably in still water, as the superincumbent shale bears every mark of having been undisturbed during its formation. The trunks are Sigillariæ of the usual species, and when found were in an upright position. The roots branched out from the bottom of several of the number, thus furnishing additional evidence that Stigmariæ are only the roots of Sigillariæ, agreeably to the opinion of the eminent geologists previously quoted. The outside of each trunk was covered with a crust of fine coal, which has evidently been formed from the bark of the trees, and the interior is filled with a species of yellow sandstone. At the joints this is of a softer nature than the rest of the deposit, and stains the fingers like yellow ochre. Small portions of charcoal were also found mixed up with this yellow substance in some of the specimens. One of the trunks measures fifteen inches in diameter; it divides into sections of about a foot in length, and the bark as usual is converted into pure coal. Another is twenty-four inches in diameter, and measures nearly eight feet in length. It had perforated hard gray shale for more

than six feet in thickness, and the remaining length was imbedded in soft sandstone. Several of the trunks had been destroyed by the workmen, and the fragments thrown into the river; the cavity of one of these measured eighteen inches in diameter, and was beautifully grooved throughout its whole length. A good sample of the trunks has been preserved in the Mechanics' Institution. It measures about twenty-one inches in diameter, and presents most of the peculiar features of this class of fossils.

The finest specimen, however, was met with on the 5th of September. It consists of two portions, an upper and a lower, which were situated about a foot apart, and had evidently been broken and displaced by some violent motion of the surrounding strata. The upper portion is two feet three inches long, and the top and bottom diameters fourteen and seventeen inches respectively; the lower portion was not followed to its termination, but it commenced with a diameter of seventeen inches, and the grooves of both portions answered to each other in every particular. The *top* of the lower part was precisely of the same level as the *bottom* of the upper; thus proving that the dislocation must have taken place horizontally. This specimen is completely coated with a layer of fine bright coal, and has an indentation on one side which appears to have been produced by enormous pressure from without. This cavity is filled with hard gray shale, which leaves the surface of the tree when struck with an iron implement.

On the western portion of the excavation other trunks were visible in the hard sandstone shale just above the coal measures, and numerous specimens of Calamites perforated the rock and shale in all directions. Many of these were coated over with a layer of fine coal, and bore a strong resemblance to the stalks of full grown sugar canes; others were even of still larger dimensions, indicating a period of most luxurious vegetation. One of the Stigmariæ exhibits a well defined pith of about three quarters of an inch in diameter, extending through its whole length; and another specimen branches off in two directions, very similar to those figured by Mr. Binney in the communication previously noticed. The swelling where this portion has been joined to the trunk is well defined, and from the fact of the roots being nearly horizontal and the trunks vertical, we are enabled to infer that the depression of the crust of the earth by which these

remains were transferred from the surface to their present position was produced by forces comparatively uniform and without much violence.

The bed upon which the roots rest is covered with the remains of vegetation. Seed-cones and Ferns occur in abundance, and several specimens of the latter have been procured, which exhibit not merely the usual symmetrically disposed fronds, but also the solid stems, from which the foliage branches off in all directions. One of the finest of these measures about twenty inches in length, by twelve in breadth, and appears to be the middle portion of a much larger plant. It is in the possession of Mr. Joseph Whitaker, who has preserved a considerable number of these impressions. The strata in which these remains have been found lie immediately above the Lancashire coal formation, and the Calamites correspond in character with those found perforating the white sandstone rock at Pickup Quarry, in Habergham Eaves, at a short distance from Burnley. Reckoning from the present surface of the street to where the fossil trees were situated we have a succession of common debris, fine sand, clay mixed with rounded pebbles, gray shale, soft sandstone, hard gray shale—in which the fossils occur; and these are followed successively by shale of a still harder kind, bastard iron ore, and coal seams.

Had the excavations proceeded farther many other trunks would no doubt have been disinterred, and hence "it is impossible to resist the conviction that the earth may contain innumerable forests entombed on the spots where they grew, many of which will ultimately be brought to light by the progress of discovery. So much information has been derived from these and similar discoveries relative to the formation of coal, that an opinion now generally prevails that the vegetation which produced the coal grew in broad and shallow lagoons or sheets of water, receiving at intervals deposits of silt and mud, the detritus of neighouring land. These streams were speedily filled up by the growth of a profusion of Stigmariæ, until, by the accumulation of mud, silt, sand, and the admixture of decayed vegetable matter, the lagoon was converted into a morass. A fresh vegetable growth now ensued of a somewhat different character, consisting of seedlike plants, Equiseta and Calamites, with here and there a larger tree. The spoils of these plants may have furnished materials for beds of peat and coal, resting on a base composed of the remains of Stigmariæ. The lagoon, or the morass, by the repeated subsidences, may have sunk

beneath the level of the sea, and have rendered the basin the receptacle of alternating deposits of sand and clay, and may thus have produced the strata of sandstone, or limestone, which occur between seams of coal. As each deposit was formed it may have been covered, either wholly or in part, by a lagoon, when the same succession of vegetable growth and deposit may have ensued."—*(Richardson's Geology and Palæontology, by Wright, pp.* 440–442.*)*

The accuracy of these views appears to be fully proved by the fossils found at Burnley. Their existence here, and in so many other localities, together with the thick coal measures beneath, indicate a luxuriant vegetation during the Carboniferous period, with which even that of the present tropical regions will scarcely admit of comparison. Some idea, however, of the magnificent Flora which then abounded in these districts may be formed from what is here advanced; but the contrast which this presents to that afforded by the woods and forests which now grow on the surface, is not more striking than the discrepancy which exists between the Zoology of the Palæozoic formations and those which now form the crust of the habitable globe.

ON COMPARATIVE PHILOLOGY CONSIDERED AS AN AID TO HISTORY.

By Rev. Arthur Ramsay, M.A.

(Read 12th February, 1857.)

It has more than once been observed that, in our ordinary conversation and writing, we are prone to use the term History in a somewhat partial and restricted sense. We are apt to apply it either to a mere profitless biography of kings and queens, men and women differing in little, except in position, from more ordinary mortals; or to an account of the political schemes and petty intrigues of rival statesmen, together with a bare, dry record of battles fought, towns and provinces taken and retaken, treaties made and broken, the cabals of Parliaments, the enactments of laws, and the disputes of theologians; or, at best, to a dull detail of disconnected facts and dates, occasionally intermixed with, and relieved by, brilliant and highly-wrought pictures of extraordinary scenes and characters. Such, however, is not the manner in which History should be conceived of, or written. We may possess a perfect knowledge of the events of a nation's life, and the order of time in which they occurred; we may understand the outward form of its political, legal, and civil institutions; we may follow the march of its armies, and accompany the settlement of its colonies, and yet be profoundly ignorant of its history. For History, in its truest and most comprehensive sense, must be something more than this. It must not merely narrate the occurrence of certain facts and events, but set in order, animate, and give expression to these; unfold their origin and point out their connection; show how they are hooked and linked together in the "never-ending still beginning" chain of causes and consequences; and, above all, trace the working of the motive power which underlies them all. It must reflect the spirit of the nation whose career it depicts; lay hold of the salient points of its character; examine the principles and passions by which its people were swayed and agitated; investigate the various turns and windings of the national current of thought and feeling; enter into, realize, and in some degree sympathize with these, in order more fully to understand their influence and develope their working. Moreover, it must

not omit to bring into view somewhat of the inner, as well as the outward life of the people whose fortunes it follows; to enquire into their mould of mind and tone of thought; to trace the gradual progress of their literature, science, and art; the growth of their commercial and manufacturing industry; and to give vivid and graphic pictures of the peculiar manners, the domestic, familiar, and daily habits and feelings prevalent at different stages of the nation's life, as illustrating its social and individual development.

When taken in this wide and expansive sense, History may stretch forth her tendrils, and derive nourishment and support from almost every department of knowledge. In short, there is hardly a single branch of science or art which may not contribute its quota to the enlargement and elucidation of History.

Poetry and mythology, sculpture and painting, geography, geology, and astronomy, archæology, ethnology, and philology, may all be brought to bear upon this study, and each in its turn may assist in unravelling its intricacies, throwing light upon its dark points, and clearing away the mists in which prejudice, party spirit, or the lapse of time may have enveloped it.

With regard to the first of these—Poetry—it is itself the earliest form of History; much ancient History is known to us in no other form; and it has been asserted in a paradox, which has more truth in it than at first sight appears, that Poetry is truer than History. We have already seen that a great historian must have several of the mental characteristics of the poet; above all, must have the poet's imagination; must be able to pass out of his own time and his own feelings, and to throw himself into the times and the feelings of the people about whom he is writing; and we may observe that several of the greatest historians, Herodotus, Livy, and our modern historian of England, have had much of the poet's character and disposition about them. We must, moreover, all of us have experienced the service which Poetry may render to History, in giving vividness and distinctness to our conceptions of the men who lived, and the deeds which were done in other days. Thus it has come to pass that there are few portions of History more familiar to the majority of Englishmen than those which are treated of by Shakespeare in his historical plays. For through that marvellous power which he has of transplanting himself, heart and soul, into other times, he enables us to realize the characters of the men and

women of those days, and the scenes through which they passed, in a manner which the elaborate descriptions of Hume, Smollett, and Lingard never can do. As has been well remarked, "Poetry has a precious power of its own for the preservation of historical truth; can so revivify the past; can put such life into it as to make it imperishable."

But independently of this faculty of irradiating and elucidating history, Poetry has an historical value of its own; for Poetry is the expression of the spirit of the age, as History is of its facts. Poetry is, as it were, the pulse of society; it represents the various currents of a nation's thoughts and feelings; for the poet is the man of his time, the man who gives the most distinct utterance to the deepest and strongest passions and feelings of his time. Thus Shakespeare, Dryden, Pope, Byron, Coleridge, and Tennyson are all types and indices of their ages. They speak out clearly and forcibly that which the educated mass of the nation are most wanting to speak; they give shape and substance to the dreams of many minds, and express the wants of many hearts; and thus, in studying a nation's poetry, we are studying, at the same time, its inner history.

Mythology contains the preface and germ of much positive history; and the legendary lore of nations has always filled a large space in their historical literature. We have, in our own day, seen a great historical mind clearing away, with wonderful skill and sagacity, the mists and shadows which gather round the mythological fountain of a nation's history; and actually making discoveries of historic truth in what used to appear so inextricably fabulous as the early history of Rome.

Geography has been termed both the "Handmaid of History," and "one of the eyes of History;" and certainly, without some knowledge of Geography, History cannot be properly understood. Our conceptions of the great events in a nation's history must necessarily be both indistinct and imperfect, unless we have some knowledge of the country in which they occurred. But it is not merely for the clearer conception of facts and events that Geography is useful. Without some acquaintance with physical Geography we can hardly read aright a people's character,—can hardly understand why certain nations have played certain parts in the great drama of the world's history, and exercised certain lasting influences on mankind in general; why certain places have been the scenes of particular actions; how advantage of position, configuration of surface, and peculiarity of

climate affect a nation's habits, manners, tone of thought, and individuality of character, and, consequently, affect its actions and its history. With such knowledge, we can the better understand why certain nations took a certain course in their migrations; how Athens became the "Mother of arts and eloquence," Rome the "Mistress of the world," Venice the "Bride of the sea," and London the "Capital of the universe;" why certain towns were founded at particular spots, and have become celebrated for their architectural, commercial, or manufacturing pre-eminence; we may realize how much Athens owed to her climate, and England owes to her insular position.

Ethnology again is, equally with Geography, so intimately connected with History as to form almost a part of it.

Geology and Archæology of late years have also asserted their claims, and vindicated their titles to be expositors and illustrators of Historic Science.

I have not spoken of Painting or Sculpture, merely because it appears sufficiently obvious to the most superficial thinker that these are visible and powerful aids and exponents of History, appealing, as they do, to our senses, and placing the most striking scenes of former times, and the most remarkable actors in them before our very eyes.

But beyond those which I have already noticed, there yet remains another of these above-mentioned aids of History, which I have reserved to the last, because, as the title of my paper indicates, I intend to dwell principally upon it. Though one of the most important, it is, at the same time, one whose value is, or at least hitherto has been, least recognised.

Philology—for such is the science I mean—is a term which may be used in two somewhat different senses. It may mean a deep research into, and an extended knowledge of, ancient and modern languages, enabling its possessor to interpret the one by the other accurately and elegantly; and since much historical literature is written in languages different from our own, it is manifest enough that the study and knowledge of these is not only an aid, but an indispensable requisite to him who would clearly examine and fully understand the history of foreign nations.

But there is another sense in which the term Philology is and may be used, namely, a research into the origin and formation of different languages, and different dialects of the same language, together with a

comparison of these among themselves, with a view to discover their affinities, and trace their connexion. This branch of the science, which is usually termed Comparative Philology, includes an examination into the origin and meaning of the names of countries and nations, their mountains, lakes, rivers, and forests; their promontories, bays, and islands; their towns and villages, customs and institutions, as well as an investigation of the successive changes which the nomenclature of these has undergone; and it is to this branch of the subject that I must confine myself this evening.

The application of this department of learning to History had been hardly more than attempted before the time of Niebuhr, who has handled it with exquisite skill, and deduced most important historical conclusions from a searching examination of the names and dialects of the different Latin tribes. Muller, Bœckh, Pritchard, Latham, Worsae, and others have, with more or less success, followed in his wake, and much also has been done by them. Still the principles, which they have most ingeniously worked out in a few individual instances, either with reference to the illustration of a particular period, or to the promotion of a favourite theory, have not yet been applied to History in general as extensively as they might be. As, through the study of the fossil remains of extinct animals, Comparative Anatomy has unveiled the physical and natural history of former ages, so, by an examination of the fragments of dead languages, and a comparison of their relations to living ones, Comparative Philology, when swayed by a skilful hand, may disinter and bring to light many portions of Ancient History; may trace the course of various streams of population, and track, so to speak, the very footmarks of mighty nations in their emigrations and immigrations. And not only may this be done, but it actually has been done. Were it not for the application of Comparative Philology, we should probably never have known the real origin of the Goths, who overthrew the Roman empire, and who were generally supposed to have been of a Thracian stock, until an examination of the specimen of their language, afforded us in the version of the Gospels by Ulphilas, their bishop, in the fourth century, proved that they were more nearly allied in kindred to the northern families of the great German race. In like manner the Gipsies were generally supposed to have been of Egyptian origin, until an examination of their language proved them to have come from the banks of the Indus; and the history and origin of various African and American

tribes, and of the Polynesian races, have been illustrated and elucidated to a considerable extent by an enquiry into the relations of their languages.

But to return to ground more familiar to us, and to take our own country, what a vast amount of history may we extract from a careful analysis of the names of the more prominent features of the land; of its counties and other divisions, its towns and villages, and even the streets of these latter; as well as from the nomenclature of its legal, civil, and political institutions; the names of its wild and domestic animals, its weapons of war, articles of food and clothing, and implements of husbandry and agriculture; an amount so great, that an eloquent modern writer has, with reason, declared that even if all other records had perished, "any one with skill to analyse the language might re-create for himself the history of the people speaking that language, might come to appreciate the divers elements out of which that people was composed, in what proportion they were mingled, and in what succession they followed one upon the other."

It is clear that any attempt to illustrate the truth of these remarks, to be successful, must, to a great extent, be of a popular character, and deal with facts which are well known, and have been often dwelt upon. Even in the application of these facts there can be but little of novelty, although it may be useful to collect a few of them together, and to point out the amount of historical knowledge which may be derived from them when taken collectively. Prefacing thus much, I propose to bring forward a few popular illustrations of the information which may be deduced from an analysis of the philological history of our own country.

The earliest name under which we read of any portion of this island, namely, Cassiterides, or the tin country, points at once to the mineral wealth, and to the commercial nature of the country. Yet this name, being not native but foreign, can afford us no information as to the origin and nature of the inhabitants. The other early names of the Island, however, such as Britannia (probably a Celtic term), Albion, *i.e.* the land of hills, Ynis-wen, or White Island, Kymru (the name of the west), and Lloegr (the name of the east and southern parts), these four last undeniably Celtic, at once instruct us as to what family the aborigines of our country belonged. But even if these ancient names of the country itself were unknown to us, still we could form something more than a conjecture on the subject, from an examination of our oldest geographical terms. The ordinary names of

the great features of the land, of our mountains (such as Pen-y-gwent, Scawfell, Helvellyn, Skiddaw, and Cader Idris); of our rivers (such as Avon, Derwent, Don, Isis, Ouse, Usk, and Esk); of our forests (such as Arden and Dean); and of our oldest towns (as London, Lincoln, and Carlisle), would at once indicate that the earliest inhabitants of this country were of the Celtic race, having probably immigrated hither from Gaul. By a minute and searching analysis of their language, and a comparison of it with the Sanskrit and other Indo-European languages, Dr. Pritchard has clearly proved that these Celts were of Eastern origin.

But the application of Philology may not only enlighten us as to their early origin, it would also, supposing all other written documents to have perished, enable us, in a degree, to reconstitute their latter history. For instance, in the names of many of our towns, such as Lincoln, Winchester, Gloucester, Leicester, Dorchester, Caerleon, &c., we find a Celtic stem, with a Latin adjunct grafted on it; and we may observe, that in all these the Latin element consists of some such word as colonia, castra, legio, or strata, terms which naturally indicate the presence of a great military and colonizing people, at one time masters of this island. If, moreover, we happen to know the names of other of our towns during the occupation of the country by this people, we may infer even more than this; for we may observe that they did not give to the towns which they found new names derived from their own language, but rather latinised the existing names. Thus Caer-Ebraic or Eborac become Eboracum; Llyn Dinas, Londinium; Caer-leol, Luguvallum, (vallum being a literal translation into Latin of the Celtic Caer); Dur-whern, Durovernum; Caer Gloyiis, Glevum; and Caer Seiont, Segontium. And not only so, but even in the names which were given at this period to the different tribes or families occupying the various divisions of the land, we may generally trace some Celtic element, such as car, tre, or dwr, as in *Cor*navii, *Cor*itani, *Trino*bantes, Att*re*batii, *Durotri*ges, &c. This general retention of the native name seems partially to glance at the fact that the Romans, in taking possession of the land, did not exterminate or drive out the Celts; in fact, never wholly conquered them. Yet that they were so driven out and conquered by some nation mightier than themselves, we may conclude from the almost total absence of any admixture of their language in the heterogeneous elements which make up our own, and from the frequency of Celtic names in Wales, Cornwall, and Cumberland; and the survival of the Celtic language in the first of

these divisions, we may draw the inference that the early inhabitants of Britain were compelled by their conquerors to take refuge amid the wilds and fastnesses of these parts of their native land.

Moreover, the nation which did so drive out these Celts has left unmistakeable traces of their occupation of the country in the language which we ordinarily use at the present day; and from this alone, were there nought else to tell us, we might ascertain that this second class of invaders were members of the great Teutonic family, and that their mastery over the country was complete, settled, and of considerable duration. For their tongue forms the great basis of our language. The broad features of nature, sun and moon, earth and heaven, fire, air, and water, day and night, morning and evening; the names of the primary social relations, such as father, mother, husband and wife, brother and sister, son and daughter; of the domestic animals, the products of the earth, and the instruments used in cultivating it, are all Teutonic. From a consideration of the names of the counties of England, such as Nor*folk*, Suf*folk*, Es*sex*, Middle*sex*, Sus*sex*, we might deduce the fact that these Teutonic invaders principally settled in the eastern and southern parts of the island.

But while we find the Saxon thus forming the staple of our language we may observe that it is overlaid with many words of a totally different order, belonging not to the Teutonic, but to the Romance languages. And we may further remark, that the great mass of terms which signify position, preeminence, dignity or honour, are of this latter tongue, a noticeable fact, from which, had we no other information to guide us, we might at once confidently conclude that this third class of invaders became in their turn the ruling power.

Instances of the rule which I have mentioned will at once occur to every one. A few of the most apparent are sovereign, prince, duke, count, baron, marshal, chancellor, treasurer, mayor, peer, parliament, palace, castle, throne, sceptre, and homage. The principal exceptions are earl (which is Danish), sheriff, knight, king, and queen; and with reference to these two last remarkable exceptions, it has been well observed, "that they would make us, even did we know nothing of the actual facts, suspect that the chieftain of this ruling power came in, not upon a new title, not as overthrowing a former dynasty, but claiming to be in the rightful line of succession; that the true continuity of the nation had not, in fact any more than in word,

been entirely broken, but survived, in due time to assert itself anew." But there are other tokens preserved in our language, besides those already referred to, of the Saxon having been, for a time at least, an inferior and oppressed race. Not only all titles of honour, but the terms of war and government; all that pertains to chivalry, and the chase; all articles of luxury, comfort, and personal adornment; and the names of cooked meats, are all Norman; while it has been an oft-repeated remark, that the names of the domestic animals themselves, while alive, are almost universally Saxon. We might instance ox, steer, cow, sheep, calf, deer, swine, fowl, as compared with beef, mutton, veal, venison, pork. From these voices of language alone, we should be able to tell, even had we lost all other history of our country, that the bulk of our population was Saxon, and that they were overcome by, subjected to, and finally amalgamated with, a body of Norman invaders; just as we before concluded from the position of those among whom Celtic terms are most frequent, that these were the earliest inhabitants of the island, and were driven into its mountains and corners by an irruption of Saxons.

But in addition to these two great elements of our language, we find especially in the northern and north-eastern parts of England, many names of places of a Scandinavian origin, or at least having a Scandinavian termination, such as *by*, *toft*, *thorpe*, *thwaite*, *haugh*, *fell*.

The frequency of these and similar terminations in the northern counties, and more especially in the eastern parts, would give us a good hint as to the position of the nations to whom we owe them; while their predominance on the coast, would lead us to suspect that they proceeded from the invasions of a maritime people; and this suspicion would be confirmed into certainty, as we observed, how many of our words relating to seafaring matters (such as ship, sail, skipper, steersman, &c.) may be referred to a Scandinavian origin. We might also remark, that the invaders in question have left among us many words indicating the presence of a nation imbued with a spirit of mercantile enterprise, such as *Cheap*side, *Chep*stow, *Chip*ping Norton, *Cop*manthorpe, *Cop*grove, all containing the same element as *Copen*hagen 'the harbour of merchants.'

From similar sources we might further collect the names of their great chieftains, and the seats of their principal conquests: for Guthrum or Gorm, Grim and Sweyn have identified themselves with such places as Ormskirk, Ormsby, Grimsby, Grimsthorpe, Grimsdale, Swainby, and

Swainthorpe. That they were heathens we might gather from such names as Tursdale, Baldersby, Fraisthorpe, places which are derived from the old heathen gods, Thor, Balder, and Freyer; and that they remained until after they had become Christians, we might conclude from such names as Bishopsthorpe, Nunthorpe, Kirkby, Crosby, &c. Furthermore, these Scandinavians or Northmen comprised both Norwegians and Danes, and the constant occurrence of the Norwegian terms *haugh*, *tarn*, *fell*, and *force* in the mountainous districts of the north, at once leads us to the fact that the former class of northmen settled principally in those parts of the island which most nearly corresponded in physical features to their own native land. The frequency of the Norwegian term *firth* on the eastern coast of Scotland would suggest the same inference.

The succession of these different nations might moreover be often inferred even from single words. Thus Maes-hir (Welsh) is the "long field," but the Saxons say Maserfeld or Mackerfield, literally "the long field-field;" and Wans-beck-water, the name of a stream, is made up of three words, each signifying 'water'; the first Danish, the second Anglo-Saxon, and the last modern English, and each given by people who were evidently ignorant of the meaning of the former term. Thus the Danes naturally called the stream Vand, i.e. water; the Saxons coming after them, ignorant of the meaning of Vand or Wans, retained that word, and added to it their own term for stream, 'beck,' and so the name became Wans-beck, i.e. 'Water-water'; one further addition by those who knew the meaning of neither wans nor beck, made the name equivalent to 'Water-water-water.' Another still more remarkable instance is the name Tor-pen-how-hill, the appellation of a hill in Cumberland, composed of four words, each of which means 'hill.'*

What I have said may in some slight and imperfect degree show how the history of a nation may be partially traced from its language, and the nomenclature of its hills, rivers, counties, and towns. As regards our own towns especially, much light might be thrown upon the early history of many of them, by an enquiry into the meaning and origin of their present and former names, and the titles of their streets, gates, and buildings. To be convinced of this we have only to examine simultaneously maps of the British empire, as it existed during the Roman, Saxon, and Norman periods. There we may see a little history traced in the successive changes of the name of many a place.

* For these instances I am indebted to Dr. Hume.

Let us take for instance the town of Newcastle-on-Tyne. We see it in the first mentioned map, marked as a Roman station under the name of *Pons Ælii*. This very appellation acquaints us with the cause of the origin of the town. The town came to the bridge, just as in Aldborough the ancient Isurium, the majority of the population have moved to Borough*bridge*, a mile distant, and though Aldborough is the parish, and Boroughbridge but a district, Boroughbridge is really the town. So the bridge over the Tyne attracted a population to Pons Ælii. Ælius is said by some, but on very slender authority, to have been a Roman centurion, who gave his name to the town. This however matters but little. Let us now turn our eyes to a map of England during the Saxon period, and we find Pons Ælii has become Munes-ceaster, or Monks-city. And why so? Now there is in the neighbourhood of Newcastle, about a mile and a half from the town, a pretty little suburb called Jesmond, the walk to which, in my younger days, used to be a favourite one with the inhabitants. Houses have gradually crept towards this suburb, and of late a cemetery has been laid out there, and ere many years are over, its name, its locality, and its existence will perhaps have been swallowed up in that of Newcastle, or probably be known to antiquaries alone. Yet to this little suburb did Newcastle owe its name of Monkschester, and not unlikely, somewhat of its prosperity. Jesmond is but a corruption of Jesus-mount, and here there was a holy well, the resort of numerous pilgrims. The well is, I believe, still to be seen; and the street along which the pilgrims passed is still called Pilgrim street. Many other names such as the Black Friary, Low Friar lane, &c., testify to the fact that Munesceaster or Newcastle, was at one time the resort of monks and friars. Its modern name, moreover, derived as it is from the new castle which Robert of Normandy built there, also involves a little piece of history.

Take again such a town as Bath, with its Celtic appellation Caer Brithow, and the numerous curious legends appertaining to it at this early period; its Roman titles, Aquæ Calidæ and Aquæ Solis or Sulis, indicating that its springs had already been discovered, while its Saxon names Bathan-ceaster, and Akemannes-ceaster or Aching-man's city, show that the healing nature of these springs was also known; and what a fund of information have we involved in the very name of a town.

The various names Ynis-Witryn, Avalonia, Glœstingbyrig, which the town of Glastonbury has gone through; the ancient and modern names of

Chester, Carlisle, Winchester, York, and many others, cannot fail to be suggestive to the lover of history.

And even out of our own country, such names as Jerusalem, Jericho, (the city of priests), Damascus, Murviedro (the muri veteres of Saguntum), Saragossa, Orleans, Petersburg, Copenhagen, and hundreds of others, contain within themselves a fund of half-hidden history.

Much also may be learned from groups of names. For instance, the course of the Roman wall might be traced from the names which occur in its neighbourhood, such as Wall-town, Welton, Wallwick, Thirlwall, Wallsend, &c. Names with similar terminations, such as "by," "feld," "ley," &c., are constantly found lying together in groups within some fixed area, thus denoting the settlements of some distinct race or family.

Historical information to a considerable extent may also be gleaned from the consideration and examination of names of places connected with the history of commerce, such as Worsted in Norfolk (once the principal seat of the manufactures of "worsted stuffs," introduced into England by the Flemings); Tarifa (whence our modern term tariff); Damascus giving name both to the article damask, and to the Damson or Damascene plum, Cambray to cambric, Moussul to muslin, Damietta to dimity, D'Ypres to diaper, Calicut to calico, Drogheda to drugget, Guingamp to gingham, Chalons to shalloon, Nankin to nankeen, Serica to silk, Pergamus to parchment, Oporto to port, Xeres to sherry, Ascalon to the scallion, Corinth to currants, Bayonne to bayonet, Cambodia to gamboge, Cerasus to the cherry, and the river Phasis to the pheasant. There is besides these another large and instructive class of countries and cities, in which the founders of a town or colony have interwoven their own names or that of some friend or relation. Such are Alexandria, Antioch, Seleucia, Ptolemais, Saragossa (i.e. Cæsarea Augusta), Orleans (ancient Aurelianis, from the Emperor Aurelian), Constantinople, Adrianople, Edinburgh or Dunedin (Edwin's town), St. Albans, Colombia, Georgia, Pennsylvania, Tasmania, Louisiana, Maryland, Carolina, Annapolis, Hydrabad, Aurungabad, Portmadoc, Tremadoc, (i.e. Mr. Maddock's town), Edgeworthstown, Birmingham, (i.e. Beorm-inga-ham, the home of the descendants of Beorm), Clapham, Carshalton (i.e. Carew's old town), Ormskirk, Grimsby, and others, to which many other curious instances might be added.

The names of many of our streets and buildings are also fraught

with rich historical associations, and much historical information. The word street itself, derived, as it is, from the Roman stratum, like the termination coln, suggests to us, one important fact of history. The Saxons less civilized, while they have left us many terms denoting a settlement, such as shire, set (in Dor*set*, Somer*set*), ton, ham, stead, and stock, have bequeathed us no word signifying a line of houses, unless it be the word road, and the term chair, commonly used in the town of Newcastle-on-Tyne, for a narrow lane or alley. The Danes have left us traces of their occupation in the word gate, of frequent occurrence in the towns of York and Ripon, derived from the Scandinavian term gata, a street, and not equivalent, as is erroneously supposed, to the English word gate. From the Normans we have row, (i.e. rue, a street), court, alley, terrace, &c. In London, St. Clement Danes, St. Olaves, &c., remind us of the Danes, Addle street (from King Athelstane) of the Saxons, Fleet street, Holborn (i.e. Old Bourne), Tyburn (i.e. brook of the Tye, Marybone (Mary-le-bourne), Upper and Lower Brook street, of the course of the streams; the Sanctuary, of the time when, entrenched in what was once the deep morass of Thorney, or Thorny island, and under the shadow of the holy Abbey, our sovereigns felt most secure in their palace at Westminster. The Strand, with the streets running out of it called after ducal names, Villiers street, Buckingham, Exeter, Cecil, Burleigh, Arundel, Norfolk, and Duke street, of the time when this was the site of the palaces of our nobility, with their gardens extending to the river; while Charing Cross, in memory of Eleanor the beloved queen (la chere reine) of Edward I., recalls one of the most touching scenes of English history.

In Liverpool, Chapel street, Castle street, Tower gardens, and others, might easily be connected with similar associations.

And not only are the names of a nation's provinces, towns, manufactures, and articles of daily sight and use, important to the student of history, in the manner which I have been pointing out, but the whole language of a people is an exponent and type of that people's character, feelings, and thoughts. Many instances will at once occur to any one who thinks of words, which could only belong to a particular people. Thus the French have many words and phrases to which we have no equivalent, merely because we are deficient in the feeling which gives them; and so with other nations. Proverbs and other forms of expression may also illustrate

a nation's character and habits. Thus "Judge not a ship as she lies in the stocks," indicates a maritime nation, while "A pin a day is a groat a year," "A penny saved is a penny gained," "Take care of the pence, and the pounds will take care of themselves," "All is not gold that glitters," savour of a commercial, money-loving people. Many other instances might be taken from other nations besides our own; and the various modes of forming a sentence, the peculiar idioms and common abbreviations prevalent among the inhabitants of different countries, might all be made to serve this same end of illustrating national character. In this way, too, may Philology be made subservient to History.

In short, to quote words far wiser and truer than any I can say, "The great business of Philology is to preserve and uphold the union of the past with the present and future, to secure the records of the human mind from being effaced and disfigured by time, to search out and trace the pedigree of all our thoughts and feelings, and to set forth the whole history of mankind as in a map, with its mountain chains of religion stretching from clime to clime, its streams of poetry, descending from them to fertilize and beautify the vallies, its gardens of art, its groves and forests of philosophy growing along their banks, and all the varieties of custom and manner that gather and settle beside them."

COMMERCE OF THE MEDIAL EAST.

By John Locke, A.B., F.S.S.; Dublin.

(Read 19th February, 1857.)

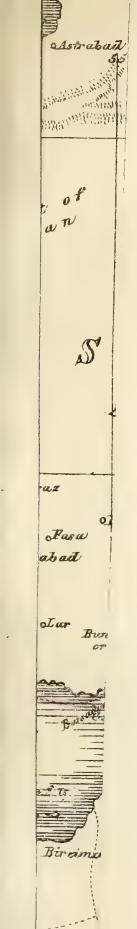
It is singular and unaccountable how greatly we have neglected the commercial advantages of the countries surrounding the Persian Gulf, which I have designated the Medial East, while trade with the extreme East, even with ultra-Gangetic Empires, has been so zealously promoted. An enterprising traveller has just succeeded in crossing Central Africa, approximating the limit of preceding adventurers, who had started from its Western and Northern shores; and ample returns, though long deferred, may be expected from the seed thus casually sown on a rich soil, where man, like the products of the land wherein he dwells, is a weed in the total absence of all civilized culture. But how little know we of the more contiguous and accessible interior of the Arabian Peninsula, whose twelve millions of people are in urgent need of those distinctive manufactures within our power to import. Sweeping daily around the coast in our ocean steamers, we touch only at one point. There, intrenched in impregnable position upon the salient angle of the peninsula, we have made, nevertheless, no systematic arrangements to penetrate the rich districts of Yemen, lying on our very bounds, and establish intimate alliance with its population, still "men of stature," as the Sabeans of old, and excelling all the other tribes in the fruitfulness of their soil and organization of their industry. What small comparative benefits, in a commercial point of view, have we reaped from the grateful amity of the two Powers, whose influence is paramount throughout Arabia and on the shores of the Persian Gulf—Turkey, to secure whose independence we have lavished so much blood and treasure, and Muscat, whose munificent chief* has frequently reminded us that he does not forget the favours conferred, when British aid confirmed

* He presented to our sailor King, William IV., a seventy-four, completely furnished, and armed with guns of the highest finish.

him on his throne, and swept from the sea the Jowasmi pirates, who menaced the ascendancy, if not, indeed, the very existence of his singular maritime empire. This, (including the fertile plains of the Batna) extends shoreward, with occasional spots of territory, to Cape Delgado, in South Africa, an interval of more than 3,000 miles. The Island of Ormuz, (three centuries ago the almost fabulously wealthy emporium of the Portuguese), and its opposite port of Bender-Abassi (Gombroon), acknowledge his sway. His capital is Muscat, the wealthiest city of Arabia, with the exception, perhaps, of Jidda, on the eastern coast, the principal entrepot for African merchandise and exchange; but he usually resides in Zanzibar, which, under his sagacious rule, has become one of the most fertile islands in the world, and is the principal source of revenue of this distinguished merchant prince.

Now, the most important preliminary to full development of commerce with the medial east is selection of the route best adapted for mercantile communication and imperial convenience, combining shortness of interval with the greatest economy in cost and time of construction. The proposed ship canal across the Isthmus of Suez, even if there did not exist the apparently insurmountable difficulties of exposed portage and shoal water at both termini, yet neither shortens the present route, nor affords facility for opening a single new market. The route within the water-shed of the Orontes and Euphrates, by rail, canal, and navigable river to Busra, which has originated from the genius and travelled experience of Chesney, is now fairly before the public; and if the ancient harbour of Seleucia be improved, or reconstructed conformably with the requirements of modern navigation, the section as far as the great caravan station of Aleppo will undoubtedly form a convenient outlet for eastern traffic, as well as for the products of the valley of the Upper Euphrates, and of those populous districts (chiefly Christian) situate on the southern slopes of the Taurus and Caucasus; and thus far will compensate amply the enterprise of its promoters.* But the Orontes is at least ninety miles out of the direct geographical course between Malta and Busra; and the singularly tortuous line of the Euphrates through the Mesopotamian plains is just the very longest that could well be traced from sea to sea. It is suggested also, that in a

* A considerable detour, however, will be necessary, in order to touch at the populous towns and villages.—See Map of Aleppo Portion.



Dublin

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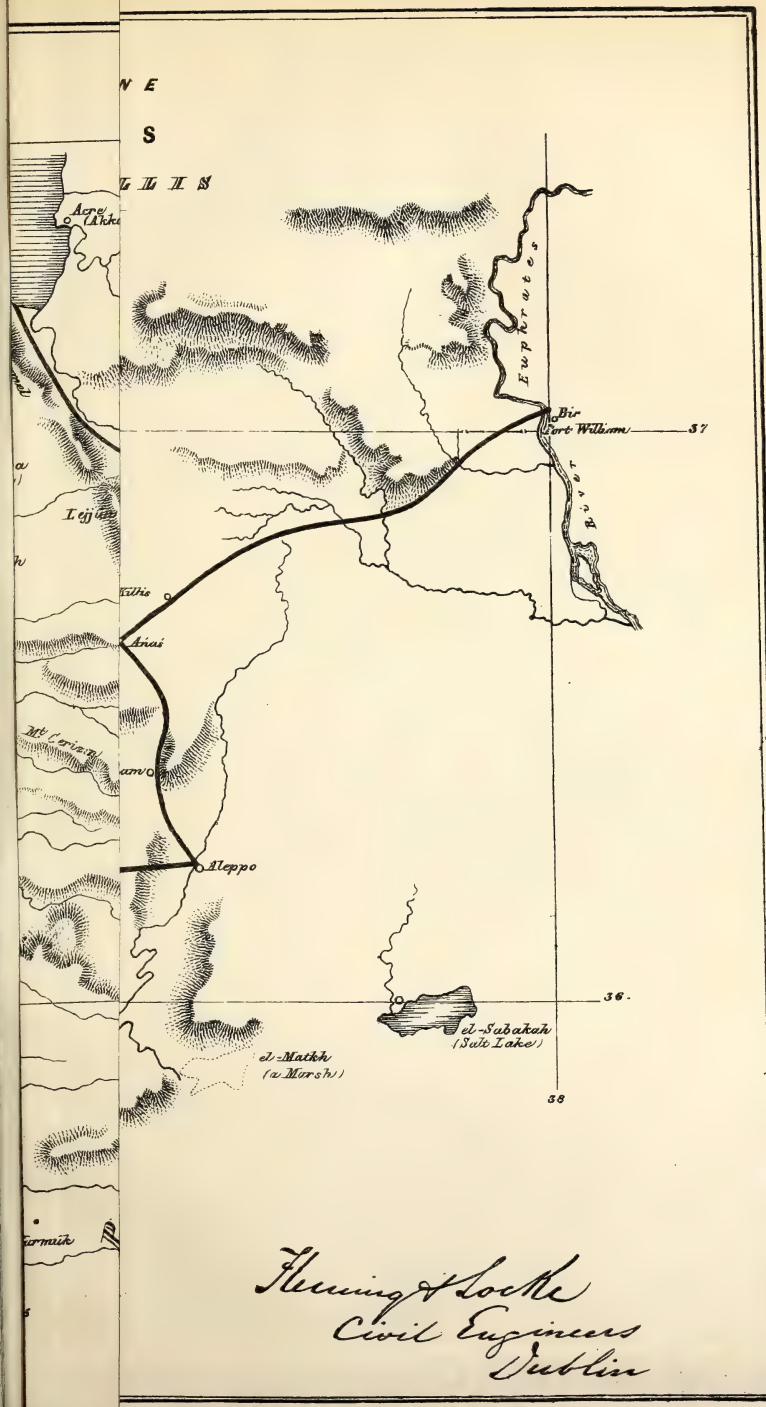
MAP
DRAWN TO ILLUSTRATE
"COMMERCE OF THE MEDIAL EAST"

Fleeming & Locke
Civil Engineers
Dublin



Fleming & Locke
Civil Engineers
Dublin

MEDITERRANEAN SEA
PROPOSED
SHIP CANAL
OF
SUEZ
Railway
Canal

PALESTINE PORTION
of the
PROPOSED
SYRO-ARABIAN LINE.
MEDITERRANEAN SEA

DETOUR LINE
to the
EUPHRATES
by
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strategical aspect our great highways of oriental traffic ought, other circumstances alike, to be as far withdrawn as practicable from positions involving complications of policy and rival interests, that might arise hereafter. The deserts of Khorasan constitute a stronger boundary against aggression than seas, or mountains, or embattled walls ; and if ever the hordes of northern Autocracy are destined to meet in conflict the merchant "kings of the east," the basin of the Upper Euphrates, or valley of the Jordan, is most likely to become the battle-field. This may not be ; such misfortune be afar ! But why should we construct a path for possible hostility, if a more southerly route offers superior advantages in shortness and facility of construction ; and such a route (less by about 540 miles than that of the Orontes and Euphrates) is suggested from the Bay of Acre to Hilla, and thence by steamer to Busra ; the lower reach of the river being comparatively free from those obstructions, the removal of which from the upper stream, in order to render steam navigation practicable, would be a work of many years. It may be observed, also, that both engineering science and financial prudence dictate the commencement of improvement at the embouchure, and thence extending it upwards, according as development of resources justifies additional outlay.

Commencing, then, at Acre, and passing along the foot of Carmel,* through the historic plains of Esdraelon,† the line would cross the Jordan in about the thirty second degree of latitude, and continue on same parallel as direct as the nature of the surface admits to the Euphrates. Burckhardt and Buckingham affirm, that for several days' journey east of Zaele the land is still capable of its ancient culture ; water, the principal element of fertility in that climate, being found abundant at a depth of four or five feet. And even beyond this district, in the more intractable desert, small settlements occur, though few and far apart, where, in the midst of scant pastures, vegetables are raised within shelter of the villages, partly for local consumption, and partly for barter with the Bedoween. After crossing the singular oasis of Anna,‡ the line is linked with the Euphrates, traversing in its latter course the route of the great caravans which, 3,000 years ago, travelled between Babylon and Tadmor, when Solomon's short-lived empire was in the zenith of its glory.

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* See Maps, which have been expressly prepared for this paper. † Hebrew Jezreel.

‡ The Geological structure is carboniferous, large masses of chalk being scattered over the surface.

Hilla is within traffic* reach of the rich plain enclosed by the bifurcation of the rivers, and it only requires the irrigating canals to be repaired or partly reconstructed, to render the soil as fruitful as of old, when Strabo† described the millet as attaining the height of twelve feet.

Whether the line should be extended (making a detour to avoid the pestilent marshes on the river banks) to some deep harbourage on the Arabian coast, thus linking with the accessions of Arabian commerce the advantage of a more advanced starting-point for India-bound ships, is matter for deferred consideration. The route traced on the accompanying map would border the trading community of the Beni-Shammar, pass through the agricultural districts of the Beni-Tameem, and, touching the great oasis of El-Ahsa, through which the whole traffic of El-Nejd passes to the gulf, cross a narrow strip of sandy waste to some terminus near El-Katif, opposite the pearl coast, and within the spacious portage of Bahrein.

Bearing in mind that this essay is communicated to a learned society, in the first maritime city of the globe, I would deprecate, as inadmissible, the plan of a railway to the Indus along shores, nine-tenths of which are sandy wastes, in preference to a shorter route by steamer.‡ Independently of our ascendancy in Eastern waters, a world-wide experience proves that the ocean is, and must always remain (at least under the present material dispensation), the more suitable highway for the exigencies of commerce; and circumstances do not warrant the expense of constructing a dictinct route for passenger transit.‖ The navigation of the gulf is less perilous than that of the Red Sea, and the telegraph rope, linked at Busra with the trans-Syrian wire, and at Currachee with the Indian lines, will lie securely within its depths, forming a stronger and more enduring bond of union with England than the united strength of all her military and naval Forces in the east.

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* The shifting of goods from river steamer to ocean steamer presents the chief objection to this route, which the removal of the bar below Busra, and deepening the river itself could alone obviate. The drainage of the marshes is an almost hopeless task, and yet without it a continued railway to the deep waters of the gulf would be impracticable, except by a detour, such as is shown on the map.

† 350 years before Strabo's time, Alexander beheld these canals with wonder and admiration, steering his boat himself through their intricacies.

‡ It is proposed that the steamers should touch at Gombroo.—See Map.

‖ The greater danger of the desert than the ocean passage is as evident now as in the time of Alexander and his admiral, Nearchus.

Continuation of Note "The shifting of goods from river steamer," &c., page 122.

Mohamra might be preferable to Busra as a terminus, and if so, the Tigris should be crossed at Hillah. Mohamra affords a more defensible site for Factories and Stores against any predatory incursion of Arabs, and the Hafar is forty-five feet deep at the quays; but the fluvial lagoons and shoals below Busra would still be encountered, except the task were undertaken of deepening the Karoon, or cutting a Canal from near Mohamra to the sea. Indeed, from Chesney's map of the soundings, it would appear that the Bah-a-mishir embouchure of the Karoon is *very nearly* as practicable an outlet as the Shat-el-Arab.

The difficulties consequent on railway transit through the desert are much exaggerated, while the comparative cheapness and facility of construction are overlooked. The locomotive may assuredly, with equal security and indefinitely greater speed, glide over the weary track than the Camel, and, when water is deficient, can carry larger supplies within its iron maw. The simoom is infrequent, and generally innocuous in so high a latitude; and, in any event, is a thousand times less perilous than the tempests of the Red Sea and Indian Ocean. Those who urge as an insuperable objection the hostility of the Bedoween, forget how speedily, and almost bloodlessly, they were humbled some thirty years ago, by a small British force, despatched into the interior to support our ally the Prince of Muscat. The Turco-Egyptian powers also, on whose friendly co-operation we have claims, as justly earned as they are likely to be cheerfully accorded, exercise a dominant influence over all the wandering tribes.

And even were we in the last resort to be cast on our own unaided resources, the annals of Anglo-Indian empire testify, how easily neutralised is the hostility of populations, sundered amongst themselves by undying traditional feuds. But, indeed, so far from opposition being anticipated in that quarter, we may rather expect that the Arab Nomade, under the impulse of the idiosyncrasy of his natural character, would bow to the power, that born of science is controlled by justice, and guided by the plenty-bearing hand of commerce; and would hail with enthusiastic wonder "the self-moved chariot, instinct with motion"*—as steady and swift it spans the ever-widening circle of his deserts. The benefits necessarily consequent upon thus rolling back, as it were, by a Syro-Arabian railway,† the tides of

* Southey's "Kehama."

† An essay on this subject was contributed by the writer to the Geographical Section of the British Association meeting at Cheltenham last August, and fifteen years ago he suggested the same route, in an essay read before a literary society, and reported, as follows, in the *Limerick Chronicle*:—"The shortest, safest and most convenient road to India may yet be found from Acre to the Euphrates, and thence through the Persian gulf to Bombay; and to prove, that there is little danger to be anticipated from the enmity of the nomadic tribes, we may adduce a singular illustration of the moral ascendancy of England, which, like a magnetic influence, girds the habitable globe. When our exploration steamer, in 1836, ploughed the sluggish waters of the Euphrates, the Arabs gazed in mingled anger and amazement, and poised their lances with hesitating aim; but, having learned through the interpreters that these were British vessels, they dashed their lances into the sands, and galloped to the brink of the river. The gloomy severity of feature relaxed, and the banks of the ancient Stream rang again with cheers of welcome for the English stranger."—*Limerick Chronicle*, Feb. 12, 1842.

oriental traffic to their primæval seat, before De Gama's great discovery, when Arabia was the caravanserai between Europe and Asia, are numerous. The energy and genius of the Arabs for commerce are still the same, as when the Saracenic conquests carried with them their sciences and industries to the utmost boundaries of the west; but these require encouragement and development by extension of European trade, which, especially in the Persian gulf and Oman, would amply reimburse the investments of British enterprise. The greater proportion of the population of Arabia, indeed of all the countries bordering the Persian gulf, as yet intact by any direct British trade, afford inviting opportunity to introduce our manufactures; while India, now profoundly tranquil, from the Himalaya to Comorin, and rounded in the completeness of empire by an improved system of intercommunication, enjoys the distinct and independent advantage of promoting the exchanges of the peculiar products of Hindostan.* The commerce of Eastern Turkey, Northern and Eastern Arabia, Persia, Beloochistan, and Cabool (including the fertile valley of Herat), all tend to the gulf as their natural outlet; and whatever territorial changes may follow from the expedition against Persia, it *must* result, like all our eastern wars, in immense accessions to our foreign trade.

We already possess commerial influence and position at Muscat, Bushire, and Busra; though the trade, even at those towns, is almost exclusively conducted by Parsees, Banyans, Armenians, and native merchants. The new positions suggested as the most suitable entrepots of commerce, and presenting secure harbourage, are Mattara and Sohar in Oman, and El-Katif and Gombroon in the gulf. Mattara, though partially open to the monsoon, is free from the excessive sultriness that renders Muscat† intolerable to Europeans. Sohar is the most convenient outlet for the productions of the numerous oases of the Batna. El-Katif, on the pearl coast, is the principal market for all El-Nejd and El-Ahsa, and between Gombroon and the island of Kishma, the navy of India might ride in safety, and protect the commerce of the Persian gulf.

* When the extensive plains of the Deccan, peculiarly suitable both in soil and climate to the growth of the cotton plant, are made available by railway and river navigation, England may be rendered entirely independent of the slave labour of the United States, for the supply of the most important material of her manufactures. Removing the seat of the market would be the first sure step to the manumission of the slave, independently of the commercial benefit to our Indian empire.

† The κρυπτὸς φοῖνιξ of Ptolemy.

Through these might be borne into the interior districts the cottons, linens, hardware, and pottery of the United Kingdom, besides many other articles of luxury or necessity.

The peculiar products of these countries are too well-known to require enumeration; but some, especially suitable to the soil and climate of Arabia and parts of Persia, may be newly introduced, or their culture largely extended. Of these the principal are tobacco, indigo, cotton, the mulberry, and several of the oil-bearing seeds. The oases too are not cultivated to their natural bounds. What scanty information we possess of the geology of Hadramaut would induce expectation of finding the precious metals, copper, and gems in the eastern Ghauts. Again, the water-sheds of the Lower Euphrates and Tigris enclose the richest soils in the world for growth of hemp and grain; and yet the wheat is allowed to rot in the fields for want of means of transport to Busra, at the very time when a Trieste mercantile firm proposes to convey Baltic breadstuffs half round the globe for supply of the Bushire expedition; at the very time too when the Pasha of Bagdat, a sagacious and liberal governor, who received his education in the Polytechnic School of Paris, invites English residents, and promises them protection and encouragement; well knowing, that security for the merchant and cultivator, and investment of capital under guidance of enlightened enterprise, form the most effectual antidotes to that barren listlessness of habits, which has paralysed during centuries of despotism the industry of the native population.

Incident on the development of new and enlarged sources of trade is the question of reforming our international commercial law, so as to simplify and render its provisions more adapted to their special purposes. This object may be attained through the instrumentality of mixed courts of British and natives at the principal ports, and with greater facility and success also, where British influence is single and supreme, than under the complicated and mutually obstructive commercial polity of European states.

The telegraph, the railway, and the steamer may be said, for all practical purposes, to annihilate geographical boundaries, and uproot those moral antagonisms of races, which have been so long cherished by despots, to secure the ends of their unscrupulous covetousness and short-sighted ambition. It needs only that peoples should know each other, in order to discern that their real interests are identical. Besides the multifarious

advantages resulting to commerce from the iron link between the Mediterranean and the Persian gulf, we may look, also, for ultimate consequences of a deeper and more enduring nature; and of these the principal are,—the suppression of slavery in the medial East, and the gradual resettlement of the Jews in Palestine. The multitudes of this ancient people, scattered through many lands, have ever been loyal as subjects, and industrious as men. The valleys of their once pleasant land, and the hills, formerly terraced to their summits with culture, lie "barren and waste without inhabitant"; and the immigration of a thrifty and peace-loving people would tend alike to the increase of the ruler's revenue, and the welfare of his subjects. Nor would the descendants of the elder-born of Abraham, who, unchanged in character and unbroken by conquest, have never left their primitive seats, remain unaffected by western contact and associations; for the Arabian Nomades must, soon or late, receive the impress of that Christian civilization, which, in conjunction with popular freedom, has made a few European nations, and their colonists, the prevailing arbiters of the human race.

What solemn and startling reflections are awakened in consideration of this subject. The electric telegraph, faintly typifying the omnipresence of Him, who once made Israel his dwelling-place. The steam-car, wonder of modern science, swiftly rolling through the valley of Jezreel, where the prophet of old saw, pourtrayed in vision, the dread final struggle between the powers of Good and Evil—touching so many scenes, hallowed by divine footsteps—and terminating its career at those desert mounds on the Euphrates, beneath which lies buried the earliest and most famous city of the past.

ON THE PERFECT r–PARTITIONS OF $r^2 - r + 1$.

By the Rev. Thomas P. Kirkman, A.M., F.R.S., Rector of Croft with Southworth, and Honorary Member of the Literary and Philosophical Society of Manchester.

(Read 21st May, 1857.)

Some years ago a question was proposed in the Ladies' and Gentlemen's Diary, which is not likely soon to be answered: "To determine the number of combinations of q together that can be made with n symbols, so that every combination of r symbols shall be m times and m times only employed."

The little that has been done towards the solution may be seen in some papers of mine in the second fifth and eighth volumes of the Cambridge and Dublin Mathematical Journal, and in two memoirs in the seventh and eighth volumes, by the late Mr. Anstice. That author has there given a properly *mathematical* discussion of a puzzle proposed by me several years before, which, as I happened to learn the other day in London, is still going round as a riddle of reputation, in circles to which it never looked to be admitted: *to make a school of fifteen young ladies all walk out in threes together, for seven successive days, so that no two shall walk twice together.* The way to do this presented itself at first by accident in the course of some investigations in combinations; but the *theory* of the solution was never unravelled till Mr. Anstice's learned papers appeared.

Questions of this nature have a high mathematical interest, and are not without their practical, and even their commercial value.

Their analytical interest arises hence; that it is exceedingly difficult to state *in algebraic language* the conditions of a *purely tactical* problem. The elements to be combined in these questions have no property except that of diversity. They have no arithmetical value or capacity, except that they can be counted. No operation of addition, subtraction, multiplication, or division can be performed upon them. They can merely be combined. A *tactic calculus* may one day be discovered, by which these problems shall be controlled; but all this is yet part of the sublime

unknown. We can do nothing effectual till then with the analysis thus far in our hands, unless we can contrive to transform the *tactic* into *arithmetic*.

There has been a day when the theorems I am about to give had a high commercial, or rather financial value, and for anything I know they may have it now.

Some years ago the promoters of a foreign lottery would have been gainers if they could have bought, for a large sum, even a partial answer to the question above quoted from the Ladies' and Gentlemen's Diary. They sold tickets, each stamped with a different combination, say of seven numbers. On the day of drawing or decision of prizes, seven numbers were drawn one by one out of an urn: this completed the drawing. The holder of the ticket on which those seven drawn numbers were printed, won the head prize; all those who had six of them on their tickets received a prize next in value; they who had five of them gained a lower prize, and so on; the lowest prizes being taken by all those persons who had on their tickets any two of the seven drawn numbers.

It was evidently of great importance to the promoters of the lottery, that they should not sell more of one combination than another, in order to equalise their own chances. They were consequently put to great expense in packing their tickets, and a great number of hands were employed by them for a length of time to make such combinations by trial as would suit the end proposed.

The problem which I consider in this paper is the following: — To form r-plets with n symbols, so that all possible duads shall be once and once only employed, and so that the r-plets shall be deducible all from any one by successive additions of the r-plet $1111\ldots$; that is, by cyclical permutation in every place; e being always set down for $n + e$.

For example, it has long been known, that triads can be so formed with seven symbols in two ways;

1 2 4	1 2 6
2 3 5	2 3 0
3 4 6	3 4 1
4 5 0	4 5 2
5 6 1	5 6 3
6 0 2	6 0 4
0 1 3	0 1 5

In either of these arrangements, every triad is formed from the preceding by addition of 111; e being always set down instead of $7+e$; and every duad in either is once and once only employed.

The symbols chosen here are the seven numbers, 1 2 3 4 5 6 0; but it is evident that they have herein no arithmetical attributes. Seven names or letters, or seven bits of glass, would give the answer equally well.

We are first to find an algebraic or arithmetical expression of the condition.

Let the r vertical columns,

$$\begin{array}{cccccc} a & , & b & , & c & , & d & . & . & . \\ 1+a, & & 1+b, & & 1+c, & & 1+d & . & . & . \\ 2+a, & & 2+b, & & 2+c, & & 2+d & . & . & . \\ . & & . & & . & & . & . & . & . \\ . & & . & & . & & . & . & . & . \\ . & & . & & . & & . & . & . & . \end{array}$$

be the arrangement required of our n symbols, 1 2 3 4 . . . . n. It is necessary that the duad $(m, m+i)$ should occur in some horizontal line. Now, wherever this may be, these numbers will be read thus, between two other lines,

$$\begin{array}{lll} m-1 & . \ . \ . \ . \ . & m+i-1 \ . \ . \ . \\ m & . \ . \ . \ . \ . & m+i \ . \ . \ . \\ m+1 & . \ . \ . \ . \ . & m+i+1 \ . \ . \ . \end{array}$$

And it is evident that every pair of numbers in those two vertical columns will have i for their difference. The difference between two columns is the sum of those of the intervening column. Thus, for example,

$$d-a=(b-a)+(c-b)+(d-c)$$
$$(d+\theta)-(a+\theta)=(b-a)+(c-b)+(d-c).$$

It is required therefore that i be the sum of the differences of the numbers that stand over and between m and $m+i$ at the head of the arrangement. That is, every number i from 1 to $n-1$, must be the sum one or more *contiguous elements* of the series

$$b-a,\ c-b,\ d-c,\ \&c.,$$

or, at least, these contiguous elements must make up $An+i$, for which it is always to be understood that i is set down.

Let $\alpha\ \beta\ \gamma\ \delta\ .\ .\ .\ \rho$ be this series. Our problem is now transformed to this: to find a series of r numbers $\alpha\ \beta\ \gamma\ \delta\ .\ .\ .\ \rho$ such that every

number i from 1 to $n-1$ shall be the sum of certain contiguous ones, one or more, in this series. One of these must be unity, and the sum of the rest must be $n-1$, the least and highest values of i; for the duad $1n$ must appear somewhere. Therefore we must have

$$\alpha+\beta+\gamma+\ldots+\rho=n; \qquad \text{(a)}$$

and the following identity expresses the rest of our conditions;

$$\begin{array}{llll}
\alpha & +\beta & +\gamma & +\ldots+\rho \\
+\alpha+\beta & +\beta+\gamma & +\gamma+\delta & +\ldots+\rho+\alpha \\
+\alpha+\beta+\gamma & +\beta+\gamma+\delta & +\gamma+\delta+\varepsilon & +\ldots+\rho+\alpha+\beta \\
+\alpha+\beta+\gamma+\delta & +\&c. & & \\
=1+2+3+\ldots+n-1, & & & \text{(A.)}
\end{array}$$

The $n-1$ numbers on the left being, in some unknown order, exactly the $n-1$ numbers on the right; and the r-plet $\alpha+\beta+\gamma+\ldots+\rho=n$ not appearing.

It is easily proved that the only possible value of n is

$$n=r^2-r+1;$$

for α heads a column of $r-1$ numbers, β a column of as many, γ one of as many, &c.; so that there are $r(r-1)$ numbers on the left hand of the equation, which are none other than the numbers $1\ 2\ \ldots\ n-1$; *i. e.*,

$$r(r-1)=n-1.$$

Since the numbers in the two members of (A) are the same identically, we have

$$\begin{array}{llll}
\alpha^m & +\beta^m & +\gamma^m & +\ldots+\rho^m \\
+(\alpha+\beta)^m & +(\beta+\gamma)^m & +(\gamma+\delta)^m & +\ldots+(\rho+\alpha)^m \\
+(\alpha+\beta+\gamma)^m & +\&c. & & \\
=1^m+2^m+3^m & \ldots+(n-1)^m; & & \text{(A')}
\end{array}$$

which is true for all values of m.

The problem before us is thus reduced to the finding the r numbers which satisfy the equations A and a. It may be stated thus: *to find the perfect r-partitions of* r^2-r+1. Any r numbers that satisfy (a) form an r-partition of n; and if they satisfy (A), I call the partition *perfect*, because every number $1\ 2\ 3\ \ldots\ n$ is made up by sums of contiguous elements, one or more, of the partition; using the word *perfect* in a sense analogous to what is understood in *a perfect number*, *i. e.*, one which is equal to the sum of all its divisors.

We have equations in abundance for the determination of $\alpha\ \beta\ \gamma\ \ldots$

The $r-1$ equations (A') made by giving to m any $r-1$ positive values; together with (a), are sufficient for the elimination of all the unknowns but one, α, which will give a resulting equation $U = O$, among whose roots will be all the sought numbers, because they are similarly, though not symmetrically, involved in (A'). The exchange of any value used of m for one not used will give us a second system from which all the unknowns but three can be eliminated, and a result $U' = O$, which will likewise have all the sought numbers among its roots. The common factor $V = O$ of U' and U being found, the numbers $\alpha\ \beta\ \gamma\ \ldots$ can be obtained by the solution of $V = O$, or proved to be impossible.

If there should be more sets of values $\alpha\ \beta\ \gamma\ \ldots$ than one, that is, if n has more than one perfect r-partition, we shall thus obtain them all. There will still be a tactical problem for solution, which is the arrangement of the elements, all roots of $V = O$, in the required order; but this will evidently, unless r be a large number, be a matter of very little difficulty. And we shall presently see, that if one perfect partition can be found, others, and most likely all the others, can be easily deduced from it.

Our problem is thus, in theory, completely solved, with the exception of the arrangement of the elements of the partitions just mentioned. And in all cases, if the problem is impossible, we can demonstrate the impossibility.

I doubt whether it is practicable completely to transform *tactic* into *arithmetic:* there will probably be, in every solution of such problems as these, a tactic element, if the problem be definite, which cannot be eliminated. Whether this be so or not, the analysis and transformation just given are, so far as I know, the first instance of a purely tactical problem being brought *completely* under the dominion of Algebra. For, saving the researches of Mr. Anstice, I know nothing in analysis or arithmetic that resembles this investigation, except the theory of magic squares and cubes, the problems in which are not purely tactical, because the results can be tested only by arithmetic. And the admirable researches of Mr. Anstice upon arrangements of triplets do not, so far as I see, either exhaust the solutions or supply a test of their impossibility.

The length of the operations indicated in the above reasoning has naturally deterred me from any application. The results that I have

obtained have been by a tentative process. But I think it likely that any industrious student who may attempt the solution of (A) will find simplifications presenting themselves that may lead to valuable theorems.

A perfect partition being found, it is to be used as *a difference circle*, or key to the formation of the r-plets required.

Thus 1 2 4 is a perfect partition of 7, and may be employed in a difference circle in two ways, thus:—

1 2 4	1 4 2
0 1 3	0 1 5
1 2 4	1 2 6
&c.	&c.

are the two arrangements of 7 things which have no triad in common, and are seen to be different sets by inspection of the triads 0 1 3 and 0 1 5, from which the others are derivable by addition of 1 1 1.

It is easily proved, that if a perfect partition of n have its elements all multiplied by any number e prime to n, the result, though not always a partition of n, is yet always a difference circle as efficient as before the multiplication. For if every term in equation (A) be multiplied by e prime to n, there will still be on both sides the equation the same $n-1$ numbers 1 2 ; . . $n-1$, if the residues only to modulus n are set down. If this is not so, we shall have some two products alike; that is,

$$e(\alpha+\beta+\gamma+\ .) = An+\theta$$
$$e(\alpha'+\beta'+\gamma'+\ .\ .) = A'n+\theta\ .\ ,$$
$$e\{\alpha+\beta+\gamma\ .\ .-(\alpha'+\beta'+\gamma'+\ .)\} = (A-A')n,$$

or, since e is prime to n,

$$(\alpha+\beta+\gamma\ .\ .\ .)-(\alpha+\beta+\gamma+\ .\ .) = A''n,$$

i. e., the difference of two numbers, either of which is less than n, is a multiple of n, which is absurd. Wherefore the proposition is established. This is easily verified by multiplying 1 2 4 by 2, 3, 4, or 6. Thus, always throwing away the sevens,

$(2\cdot1,\ 2\cdot2,\ 2\cdot4) = 2,\ 4,\ 1$, as before
$(3\cdot1,\ 3\cdot2,\ 3\cdot4) = 3,\ 6,\ 5, = (3+6,\ 6+5,\ 5+3) = (2,\ 4,\ 1,)$
$(4\cdot1,\ 4\cdot2,\ 4\cdot4) = 4,\ 1,\ 2,$
$(5\cdot1,\ 5\cdot2,\ 5\cdot4) = (5,\ 3,\ 6) = (5+3,\ 3+6,\ 6+5) = (1,\ 2,\ 4)$
$(6\cdot1,\ 6\cdot2,\ 6\cdot4) = (6,\ 5,\ 3) = (6+5,\ 5+3,\ 3+6) = (4,\ 1,\ 2).$

The identity of the difference circles 1 2 4 and 3 6 5 consists in this, that either of them can be made to take the form of the other, by setting down, instead of single elements, syllables of contiguous elements; thus 1 2 4 is

$$(1 + 2, 2 + 4, 4 + 1) = 3, 6, 5, \text{ and}$$

3 6 5 is $(3 + 6, 6 + 5, 5 + 3) = 2, 4, 1.$

And by virtue of this identity they will both give the same arrangements of triads. Thus using 3 6 5 for our difference circle instead of 1 2 4, we obtain the same two sets of triads as before;

3	6	5
0	3	2
1	4	3
2	5	4
3	6	5
4	0	6
5	1	0
6	2	1

3	5	6
0	3	1
1	4	2
2	5	3
3	6	4
4	0	5
5	1	6
6	2	0

If C stands for the circle 1 2 4, we may represent the above results by the equations (to modulus 7),

$$2C = C, \text{ whence follows}$$
$$4C = C,$$
$$\text{and } 3C = C, \text{ whence follows}$$
$$2 \cdot 3C = C = 6C$$
$$4 \cdot 3C = C = 5C;$$

the truth of which depends on the fact that every number below seven is of the form $2^a 3^b$ to modulus 7, thus—

2.3^0, $2^1 3^0$, $2^0 3^1$, $2^2 3^0$, $2^2 3^1$, 2.3^1, are (to modulus 7) the numbers 1, 2, 3, 4, 5, 6. Or since

$$3 = -2^2, \text{ (modulus 7)}$$

all those six numbers are of the form $\pm 2^m$ to that modulus.

It is readily found by trial that 1 2 6 4 is a perfect partition of 13. It becomes a matter of interest to examine whether the difference circles obtained by multiplying this by the successive numbers 2, 3, . . . 12, will be the same or different circles. Now

$$2(1, 2, 6, 4) = 2, 4, 12, 8$$
$$3(1, 2, 6, 4,) = 3, 6, 5, 12.$$

The circle 3 6 5 12 is 1 2 6 4, because

$$(3, 6, 5, 12) = (1 + 2, 6, 4 + 1, 2 + 6 + 4), \text{ and}$$
$$(1, 2, 6, 4) = (3 + 6 + 5, 12 + 3, 6, 5 + 12);$$

but 2 and 4 are contiguous elements in 2, 4, 12, 8, and non-contiguous in 1, 2, 6, 4; wherefore these circles are not the same. In fact 2, 4, 12, 8, transformed *by a regular course about it*, to shew syllables whose sum is 13, is

$$(2, 4 + 12, 8 + 2 + 4, 12 + 8) = 2, 3, 1, 7;$$

and cannot be thrown into four *syllables* by a regular circuit, whose values are 1, 2, 6, 4. Also,

$$2(2, 3, 1, 7) = 4, 6, 2, 1.$$

If C stand for 1 2 6 4, and D for (2, 4, 12, 8 =) 1 7 2 3, we have thus—

$$2C = D,$$
$$2D = C, \text{ whence}$$
$$2^2 C = C, \; 2^2 D = D.$$

This is a remarkable solution of the functional equation

$$\phi^2 x = x, \text{ where}$$
$$\phi x \text{ is neither } x \text{ nor } -x.$$

From the equations, above proved,

$$2C = D, \; 2D = C, \; 3C = C = 4C$$

follow $2^{2m} 3^k C = C$, $\qquad 2^{2m} 3^k D = D$

$2^{2m+1} 3^k C = D$; $\qquad 2^{2m+1} 3^k D = C$;

Now all the numbers

1, 3, 4, 9, 10, 12 are of the form $2^{2m} 3^k$

and 2, 5, 6, 7, 8, 11 are of the form $2^{2m+1} 3^k$,

to modulus 13. It follows that if the circle 1 2 6 4 be multiplied by any of the former six numbers, it remains unaltered, and if by any of the latter six, it becomes 1 7 2 3.

And no other circle can be deduced by such multiplication from either of these. This does not prove that no other perfect partition of 13 exists; but it is easy to see that no more are possible, from the consideration that both 1 and 2 must be elements in every perfect partition, and that no sum of unlike figures greater than 2 can have a sum = 10, except 6, 4 and 7, 3.

We can therefore make four and only four arrangements of quadruplets

with 13 symbols, so as to exhaust the duads once and once only. These are obtained from the difference circles, thus:—

1	2	6	4
0	1	3	9
1	2	4	10
2	3	5	11
3	4	6	12
4	5	7	0
5	6	8	1
6	7	9	2
7	8	10	3
8	9	11	4
9	10	12	5
10	11	0	6
11	12	1	7
12	0	2	8

1	4	6	2
0	1	5	11
1	2	6	12
2	3	7	0
3	4	8	1
4	5	9	2
5	6	10	3
6	7	11	4
7	8	12	5
8	9	0	6
9	10	1	7
10	11	2	8
11	12	3	9
12	0	4	10

1	7	2	3
0	1	8	10
1	2	9	11
2	3	10	12
3	4	11	0
4	5	12	1
5	6	0	2
6	7	1	3
7	8	2	4
8	9	3	5
9	10	4	6
10	11	5	7
11	12	6	8
12	0	7	9

1	3	2	7
0	1	4	6
1	2	5	7
2	3	6	8
3	4	7	9
4	5	8	10
5	6	9	11
6	7	10	12
7	8	11	0
8	9	12	1
9	10	0	2
10	11	1	3
11	12	2	4
12	0	3	5

In these arrangements no triad is repeated. And I think it will be found impossible to form another quadruplet which shall not contain a triad before employed.

These results might be thrown into the shape of an amusing puzzle thus:—

A invites a family of 13 persons to dine with him, four at once, so long as no two shall dine together a second time. They manage to eat 13 dinners. *A* continues his invitation to the same family to dine with him four at once, so long as no three, reckoning from the first invitation, shall dine a second time together. They manage to eat 39 more dinners. How did they arrange themselves, and contrive it also in such a manner, that every member of the family ate the same number of dinners?

In a memoir in the fifth volume of the Cambridge and Dublin Journal, I have proved that, whenever r is prime, $r^2 + r + 1$ symbols can be arranged in $(r + 1)$-plets, so that every duad shall be once employed and once only; but the method given of forming the multiplets is not so elegant as this deduced from the difference circles here discussed. It was a matter of surprise to me to discover by accident a perfect partition of $21 = 4^2 + 4 + 1$, thus proving that r needs not be prime. This partition is 1, 3, 10, 2, 5.

All the numbers prime to 21 are of the form 5.2^a, *i. e.*, $\pm 2^a$, to modulus 21. If then this difference circle is unchanged by multiplication by 2, or 5, we know that no multiplier can change it. Now

$$2(1, 3, 10, 2, 5) = (2, 6, 20, 4, 10)$$
$$= (2, 5 + 1, 3 + 10 + 2 + 5, 1 + 3, 10);$$
$$5.(1, 3, 10, 2, 5) = (5, 15, 8, 10, 4)$$
$$= (5, 2 + 10 + 3, 1 + 5 + 2, 10, 3 + 1);$$

which are evidently the same circle 1, 3, 10, 2, 5. We conclude that no other perfect partition of 21 can be deduced from this one. But this does not prove that no other exists.

We know, however, that if 1,2 be not contiguous in a perfect partition, it must contain 3; and that if 1,2 be contiguous, it cannot contain 3. And it is easily proved, by examination of the 5-partitions of 21 that have five different elements, that no perfect one exists except 1, 3, 10, 2, 5.

There are thus only two ways of arranging 21 things in 5-plets, so as to exhaust the duads once and once only.

1	3	10	2	5
0	1	4	14	16
1	2	5	15	17
2	3	6	16	18
3	4	7	17	19
4	5	8	18	20
5	6	9	19	0
6	7	10	20	1
7	8	11	0	2
8	9	12	1	3
9	10	13	2	4
10	11	14	3	5
11	12	15	4	6
12	13	16	5	7
13	14	17	6	8
14	15	18	7	9
15	16	19	8	10
16	17	20	9	11
17	18	0	10	12
18	19	1	11	13
19	20	2	12	14
20	0	3	13	15

1	5	2	10	3
0	1	6	8	18
1	2	7	9	19
2	3	8	10	20
3	4	9	11	0
4	5	10	12	1
5	6	11	13	2
6	7	12	14	3
7	8	13	15	4
8	9	14	16	5
9	10	15	17	6
10	11	16	18	7
11	12	17	19	8
12	13	18	20	9
13	14	19	0	10
14	15	20	1	11
15	16	0	2	12
16	17	1	3	13
17	18	2	4	14
18	19	3	5	15
19	29	4	6	16
20	0	5	7	17

In these no triad is repeated, and I think no 5-plet can be formed beside without repeating a triad.

I found a perfect partition of 31 by chance, simply by writing 2 2 2 2 2 under 1 3 10 2 5, which gave me 3 5 12 4 7, and this by a small change became 2, 1, 5, 12, 4, 7, a perfect partition, exhibiting the numbers 1 2 3 . . . . 30 in the proper form, thus: —

1, 2, 2 + 1, 4, 5, 1 + 5, 7, 2 + 1 + 5, 2 + 7, 1 + 2 + 7, 4 + 7, 12, 4 + 7 + 2, 4 + 7 + 2 + 1, 7 + 2 + 1 + 5, 12 + 4, &c., the remaining numbers being simply the complements of those here written.

To examine whether we can obtain from this any other perfect partition, we write

$$2\,(2, 1, 5, 12, 4, 7) = (4, 2, 10, 24, 8, 14)$$

which we see at once to be a new circle, because 2 and 4 on the right are contiguous syllables; it is, in fact, reduced to syllables whose sum is 31,

$(14, 4, 2, 10 + 4, 8 + 14 + 4 + 2 + 10, 24 + 8,) = 14, 4, 2, 3, 7, 1.$

Next,

$$3\,(2, 1, 5, 12, 4, 7) = (6, 3, 15, 5, 12, 21);$$

this has 2 + 1, 5 contiguous on one side, and 3 . . 5 non-contiguous on the other; we have therefore two partitions before us, and the new one is —

$(6, 3, 15 + 5 + 12, 21 + 6 + 3 + 15, 5, 12 + 21) = (6, 3, 1, 14, 5, 2).$

Again,

$$4\,(2, 1, 5, 12, 4, 7) = (8, 4, 20, 17, 16, 28),$$

showing different partitions, by 2 + 1 + 5, 4 non-contiguous on the left, and 8, 4 contiguous on the right. The new one is —

$(8 + 4 + 20, 17 + 16, 28 + 8, 4, 20 + 17, 16 + 28) = (1, 2, 5, 4, 6, 13).$

The next step is —

$$5\,(2, 1, 5, 12, 4, 7) = (10, 5, 25, 29, 20, 4)$$

a repetition of our first difference circle; for it is simply

$(7 + 2 + 1, 5, 12 + 4 + 7 + 2, 1 + 5 + 12 + 4 + 7, 2 + 1 + 5 + 12, 4).$

We need not try 6 times; for if

$$5C = C$$

it must follow from

$$6 \cdot 5C + C = 31C = 0, \text{ to modulus } 31,$$

that $6 \cdot 5C = -C = -5C,$

$$\text{or } 6\cdot C = -C,$$

i. e., $6C$ can differ from C only in sign, or it must be the same circle read backwards. And, in fact,

$$6\cdot(2, 1, 5, 12, 4, 7) = (12, 6, 30, 10, 24, 11)$$
$$= (12, 6+30, 10+24+11+12+6, 30+10+24, 11+12+6+30+10,$$
$$24+11) = (12, 5, 1, 2, 7, 4),$$

our first circle reversed.

Neither is it necessary to try 7 times; for

$$\text{if } 5^2C = C$$
$$4\cdot 5^2C = 4C, \text{ or}$$
$$7C = 4C,$$

because $4\cdot 25 = 7$, to modulus 31.

Consequently

$$7(2, 1, 5, 12, 4, 7) = 2(1, 2, 5, 4, 6, 13)$$

as found before from the multiplier 4; and this the reader can readily verify.

The multiplier 8 gives us, since $8C = 2\cdot 4C$

$$8(2, 1, 5, 12, 4, 7) = 2(1, 2, 5, 4, 6, 13)$$
$$= (2, 4, 10, 8, 12, 26)$$

again a new partition, as seen from the position of the elements 2 and 4. Reduced to syllables whose sum is 31, it becomes

$$(2, 4+10+8+12, 26+2+4, 10, 8, 12+26) = (2, 3, 1, 10, 8, 7).$$

We have proved that

$$C = (2, 1, 5, 12, 4, 7) = 5C = 6C;$$
$$2C = (1, 7, 3, 2, 4, 14)$$
$$3C = (1, 3, 6, 2, 5, 14) = 3\cdot 5C = -16C;$$
$$4C = (1, 2, 5, 4, 6, 13) = 7C$$
$$8C = (1, 3, 2, 7, 8, 10).$$

There are no more deducible from C, or its multiples, because every number less than 31 is of the form $\pm A2^m$, to modulus 31, when A is either 1 or 3, and m is not greater than 3; for $2^4 = 1$, to that modulus: or as this is usually expressed in the language of equivalences, 2 is a prime root of $x^4 - 1 = 0$ to modulus 31.

From these can be obtained ten different sets of 31 6-plets, each set exhausting all the duads, thus:—

	1	5	12	4	7	2
0	1	6	18	22	29	
1	2	7	19	23	30	
2	3	8	20	24	0	
3	4	9	21	25	1	
4	5	10	22	26	2	
5	6	11	23	27	3	
6	7	12	24	28	4	
7	8	13	25	29	5	
8	9	14	26	30	6	
9	10	15	27	0	7	
10	11	16	28	1	8	
11	12	17	29	2	9	
12	13	18	30	3	10	
13	14	19	0	4	11	
14	15	20	1	5	12	
15	16	21	2	6	13	
16	17	22	3	7	14	
17	18	23	4	8	15	
18	19	24	5	9	16	
19	20	25	6	10	17	
20	21	26	7	11	18	
21	22	27	8	12	19	
22	23	28	9	13	20	
23	24	29	10	14	21	
24	25	30	11	15	22	
25	26	0	12	16	23	
26	27	1	13	17	24	
27	28	2	14	18	25	
28	29	3	15	19	26	
29	30	4	16	20	27	
30	0	5	17	21	28	

	1	2	7	4	12	5
0	1	3	10	14	26	
1	2	4	11	I5	27	
2	3	5	12	16	28	
3	4	6	13	17	28	
4	5	7	14	18	30	
5	6	8	15	19	0	
6	7	9	16	20	1	
7	8	10	17	21	2	
8	9	11	18	22	3	
9	10	12	19	23	4	
10	11	13	20	24	5	
11	12	14	21	25	6	
12	13	15	22	26	7	
13	14	16	23	27	8	
14	15	17	24	28	9	
15	16	18	25	29	10	
16	17	19	26	30	11	
17	18	20	27	0	12	
18	19	21	28	1	13	
19	20	22	29	2	14	
20	21	23	30	3	15	
21	22	24	0	4	16	
22	23	25	1	5	17	
23	24	26	2	6	18	
24	25	27	3	7	19	
25	26	28	4	8	20	
26	27	29	5	9	21	
27	28	30	6	10	22	
28	29	0	7	11	23	
29	30	1	8	12	24	
30	0	2	9	13	25	

In the same way eight more sets of sextuplets can be made.

It was first observed by Mr. Anstice, in a letter to me, that as the powers of 2, estimated to modulus 7, give what he calls in his memoirs above quoted a primary triplet 1 2 4, from which others can be cyclically obtained so as to exhaust all the duads in 7 symbols, so the powers of 2, estimated to modulus 73, give a primary 9-plet from which others can be made to exhaust the duads in 73 things. This 9-plet is

1, 2, 4, 8, 16, 32, 64, 55, 37.

It follows that the circle of differences made from these numbers arranged in order of magnitude, viz.:—

$$1, 2, 4, 8, 16, 5, 18, 9, 10,$$

is a perfect 9-partition of 73. This appears from the series

$1, 2, 1+2, 4, 5, 2+4, 1+2+4, 8, 9, 10, 10+1, 4+8, 10+1+2, 2+4+8, 1+2+4+8, 16, 10+1+2+4, 18, 9+10, 9+10+1, 16+5, 9+10+1+2, 5+18, 8+16, 10+1+2+4+8, 9+10+1+2+4, 18+9, 4+8+16, 8+16+5, 2+4+8+16, 1+2+4+8+16, 5+18+9, 4+8+16+5, 9+10+1+2+4+8, 2+4+8+16+5, 1+2+4+18+16+5,$ &c,

the rest of the syllables being the complements of these.

We proceed to examine whether other perfect partitions of 73 can be derived from this.

$$2\,(1, 2, 4, 8, 16, 5, 18, 9, 10) = (2, 4, 8, 16, 32, 10, 36, 18, 20)$$
$$= (2, 4, 8, 16, 5+18+9, 10, 1+2+4+8+16+5, 18, 9+10+1)$$

the same circle still. Putting H for this circle, we can write

$$2H = H = 2^m H.$$

Next,

$$3H = (3, 6, 12, 24, 48, 15, 54, 27, 30)$$
$$= (3, 6, 12, 24, -25, 15, -19, 27, 30)$$

since $48+25 = 0 = 54+19$; (modulus 73)

or $3H = 3, 6, (12+24-25+15-19), (27+30+3+6+12+24-25),$
$(15-19+27+30+3+6+12), (24-25+15),$
$(-19+27), (30+3+6+12+24), (-25+15-19+27+30),$
$= 3, 6, 7, 4, 1, 14, 8, 2, 28,$

a new perfect 9-partition of 73.

The multiplier 4 has the effect of 2, or of 1.

$$5H = (5, 10, 20, -33, 7, 25, 17, -28, -23)$$
$= (5+10+20-33), (7+25+17-28-23+5), (10+20-33+7),$
$(25+17-28-23+5+10), (20-33+7+25+17-28),$
$(-23+5+10+20-33+7+25), (17-28-23+5+10+20),$
$(-33+7+25+17), ((-28-23=)22)$
$= (2, 3, 4, 6, 8, 11, 1, 16, 22)$ 1,

which is a third perfect 9-partition of 73.

Now, $6H = 3 \cdot 2H = 3H$, already found;

$7H = 5 \cdot 2^4 H = 5H$, just found;

$$9H = -64H = -2^6H = -H,$$

the reverse of our circle H;

We have next to examine $11H$;

$11H = (11, 22, -29, 15, 30, -18, -21, 26, 37)$

$= (11 + 22 - 29), (15 + 30 - 18 - 21), (26 + 37 + 11),$

$(22 - 29 + 15), (30 - 18), (-21 + 26 + 37 + 11 + 22),$

$(-29 + 15 + 30 - 18 - 21 + 26), (37 + 11 + 22 - 29 + 15 + 30)$

$(-18 - 21 + 26 + 37),$

$= (4, 6, 1, 8, 12, 2, 3, 13, 24),$

the fourth perfect 9-partiton of 73.

There are no more than these three, $3H$, $5H$, and $11H$, deducible from H by any multiplier prime to 73, that is by any of the numbers 1 2 3 . . . 72; for these are all of the forms, 18 of each form,

$$\pm 2^m, \pm 3 \cdot 2^m, \pm 5 \cdot 2^m, \text{ or } \pm 11 \cdot 2^m, \text{ to modulus } 73,$$

as may easily be verified. Consequently the multiplication of H by any of these numbers will have the effect of multiplication by 1, 3, 5, or 11, taken either with positive or negative sign.

And if we multiply any of the three difference circles $3H$, $5H$, or $11H$ by any number prime to 73, we shall merely reproduce one of the four circles

$$H = (1, 2, 4, 8, 16, 5, 18, 9, 10),$$
$$3H = (1, 4, 7, 6, 3, 28, 2, 8, 14),$$
$$5H = (1, 16, 22, 2, 3, 4, 6, 8, 11),$$
$$11H = (1, 8, 12, 2, 3, 13, 24, 4, 6).$$

Whether there be any other perfect 9-partitions of 73 besides these, it is not easy to prove by a simple argument. It is enough for theory that we have the power to determine this by the solution of equation (A), as pointed out in the former part of this memoir.

The four difference circles above found enable us to form, in eight different ways, 73 9-plets, each set exhausting once and once only the duads possible with 73 symbols, 1, 2, 3, . . . 72, 0, thus:—

1	2	4	8	16	5	18	9	10
0	1	3	7	15	31	36	59	63
1	2	4	8	16	32	37	55	64
2	3	5	9	17	33	38	56	65

&c.

	1	10	9	18	5	16	8	4	2
0	1	11	20	38	43	59	67	71	
1	2	12	21	39	44	60	68	72	
2	3	13	22	40	45	61	69	0	

&c.

	1	4	7	6	3	28	2	8	14
0	1	5	12	18	21	49	51	59	
1	2	6	13	19	22	50	52	60	
2	3	7	14	20	23	51	53	61	

&c.

	1	14	8	2	28	3	6	7	4
0	1	15	23	25	53	56	62	69	
1	2	16	24	26	54	57	63	70	
2	3	17	25	27	55	58	64	71	

&c.

And four more sets can be made in like manner from the remaining two difference circles.

It may be an amusement to the reader, whether mathematical or not, to seek for the perfect r-partitions of, ($r = 7$, 8, 10, &c),

$$43 = 7^2 - 7 + 1$$
$$57 = 8^2 - 8 + 1$$
$$91 = 10^2 - 10 + 1$$

&c.

I cannot demonstrate that none exists for 43; but I think it improbable. That one and more than one can be found for 57 I think is very likely; for I have proved, in a paper before alluded to in the Cambridge and Dublin Journal, that octuplets can be made to exhaust the duads in $57 = 7^2 + 7 + 1$, because 7 is prime. And I do not see why decuplets should not be discovered for 91. If there be a general expression for these perfect partitions, it will in all probability be a complex and discontinuous function of r.

ON THE HISTORY OF THE ENGLISH LANGUAGE.

By Thomas Wright, Esq., M.A., F.S.A.

(Read 23rd April, 1857.)

I think few will deny that our attention could hardly be called to a more interesting or important subject than that of the language we speak. Language is in a manner the index of our existence, it is intimately connected with all our domestic relations as well as with our relations to other peoples, and the history of our own language is specially to us that of ourselves as a race of mankind. We have reason, therefore, to be surprised that it is a subject with which people in general are little acquainted, and that it has hitherto been taught so imperfectly and so incorrectly in our ordinary course of education; and this I am sure you will accept as my excuse for taking it for my subject on the present occasion.

Some fifteen centuries ago, a great portion of Europe was absorbed in the vast empire of Rome, which included this island, with the exception of the wild districts of the extreme north, and which on the continent had a varying frontier extending from the Rhine to the Danube. With few exceptions, such as those of the Armoricans and the Aquitanians (represented by the modern population of Britany and the Basque countries) and that of Greece, Rome had imposed her own language upon the conquered provinces, and at the time of which I am speaking, the population of as much of western Europe as formed part of the empire, spoke generally the Latin tongue. I believe that this was strictly the case with the Roman province of Britain, and that nearly four hundred years of uninterrupted occupation, with a current of recruits of all sorts to the colonists, perhaps in proportion more continual even than that in modern times of the United States of America, had entirely effaced the primitive character of its population. The Celtic race, driven everywhere before the civilization of Rome or the hostility of the Teutons, had found its last refuge to the West in Ireland, and I am inclined to think that we must look to the Irish language as the real representative of the Celtic dialects which were spoken in Britain before its occupation by the Romans. It appears to me most probable that the population of the North of Scotland was Teutonic—German or Scandinavian. On the

Continent, the vast sweep of territory to the north of the Roman frontier, in nearly its whole extent, was occupied by the great Teutonic race, in its various divisions of high German, in which the Goths were included, Low German, occupying the countries in the west up to the Danish peninsula, and Scandinavian, which included the Danes and the Swedes, the Norwegians, and North-western islanders—in fact, the Northmen.

It is no part of my plan to enter further into the divisions of the Teutonic race on the Continent, or into their relations with the empire. You all know that the Teutons eventually overrun and conquered the Roman provinces, and that three distinct tribes of the Low Germans,—the Angles, the Saxons, and the Jutes,—made themselves masters of Britain. The establishment of the Teutons in the Roman provinces brought with it a change of language, as well as of manners and political feelings, on one part or the other, according to a variety of circumstances into which I will not now enter. On the Continent, over nearly the whole extent of the western empire, the modern languages are derived from the Latin, and were known during the whole period of the middle ages by the name of Roman. In England the Teutonic language completely superseded the Latin, for several causes, of which one was no doubt the circumstance, that for a long period previous to the final breaking up of the western empire, the population of Britain had been continually and largely increased by the immigration of German settlers, so that the German spirit was far more powerful than the Roman.

The notion will naturally suggest itself to you, that, as three different Teutonic peoples conquered the island of Britain, they must have imported into it three languages instead of one. This notion, however, is only correct in a certain sense; for the languages talked by the different German tribes, or states, had not at that time so far diverged in form as to hinder them from easily intermixing and coalescing. The different branches of the Low Germans could not only understand one another with perfect ease, but they could probably intercommunicate with their next neighbours, either of the high German tongue or of the Scandinavian, with at least as little difficulty as at the present day a Lancashire peasant would discourse with a Yorkshireman. In fact, what are now distinct languages were then represented only by cognate dialects. There can be no doubt that there was a strong difference of dialect, from the earliest period of their settlement in this island, between the languages spoken by the Angles, the

Saxons, and the Jutes, and these divisions were the foundations of the great classes of the modern dialects of England. The Jutes, represented chiefly by the kingdom of Kent, were the least numerous of the three Teutonic peoples of Britain, and, although, probably from their position, they had at an early period attained to a great degree of commercial prosperity, riches, and power, they exercised no permanent influence, either political or much less literary, on the great Anglo-Saxon confederacy. It was the Angles, who were numerically by far the most powerful of the Teutonic settlers, who first took the lead in intelligence and in literature. The earliest literary productions of the Anglo-Saxons, and the oldest Anglo-Saxon traditions known, appear to belong chiefly to the family of the Angles, and their influence over the rest was so great, that not only did these accept from them the general title of *Englisc*, but even the nations of the continent who had preserved the Roman language, generally agreed in giving to the Teutonic population of Britain the name of *Angli*. Thus we derive from this one branch of the triple composition of our race the national name of which we are proud, that of Englishmen, and it is from them that our language was called English. Nevertheless, the Anglian division of the race fell in the course of the eighth century under the superior influence of the Saxons, and Wessex, or the kingdom of the West-Saxons, not only gave us finally our line of kings, but furnished us with the model of our language and literature. The written English language of the present day is founded upon that dialect in which King Alfred wrote, and which held in Saxon England somewhat the same position as the Attic dialect in ancient Greece. With this change in the predominance of race, the term *Saxon* came into more frequent use to designate the Teutonic population of this island, and, as there continued to be Saxons on the Continent as well as in England, it has become the practise to call our own ancestors, by way of distinction and not as indicating an amalgamation of race, the Anglo-Saxons, that is, the Saxons of England. Yet so permanent are early ethnological principles, that though the Saxon dynasty, the Saxon dialect, and the Saxon laws, became those of the whole Anglo-Saxon people, the older and particular designation has outlived all changes in the names we now possess of Englishmen, the English language, and England.

The Anglo-Saxon language—under which appellation we now include the language of the Teutonic settlers in Britain in its three great divisions—

was one hardly less complicated in its grammatical forms and inflections, when first introduced into this island, than that of ancient Greece. But, at the earliest period at which we know it, the Anglo-Saxon language was already undergoing a degradation from its primitive forms and all the other changes to which languages in general are subject. At the end of the Saxon period much of the language had already become obsolete. In the first place, it was very copious in words, and one word to express a particular idea was continually going out of fashion to give place to another. In the second place, a very important portion of the language in the earlier stage of its history, that of poetry, had become obsolete in the mass. The language of poetry in Anglo-Saxon was originally distinguished, not only by its peculiar phraseology, but by the use of a class of words which were rarely met with in the ordinary language of life, and which evidently belonged to the minstrel class, and to what we may call the heroic age. The writers of poetry at a later period seem to have lost the command of this language, and their verses, though still possessing the metrical forms, had become in other respects, of course with some exceptions, remarkably prosaic. I doubt whether people in general, at the close of the Anglo-Saxon period, understood the older language of poetry, and very few of its words were carried forward into semi-Saxon or preserved in later English.

I am one of those who do not believe in the existence of a Celtic element in the English language.* I have no doubt that the Anglo-Saxons found in this island a people talking Latin, and if any portion of the population really continued to use the Celtic tongue, it must have been a small and unimportant class, who are not likely to have exercised any influence

* It must not be forgotten that the Teutonic and Celtic languages, are, after all, only two branches from the same original stock, and we very naturally expect to find a great number of roots common to both, and similar forms of words presenting themselves with similar meanings, without any reason for supposing that the one language borrowed them from the other. Moreover, I am perfectly satisfied that the Welsh language, as we know it, contains a considerable number of words which have been taken directly, not only from Anglo-Saxon, or English, but from Anglo-Norman also, and the former perhaps, only came into the Welsh language since the Norman Conquest. These two circumstances seem to me quite sufficient to account for the verbal coincidences pointed out in a paper by the Rev. J. Davies, recently published by the Philological Society, as far as those coincidences are real. We are not unacquainted with the history of the Anglo-Saxons in this country, and I believe that that history is quite contrary to the notion that at the time of the Norman Conquest there was any such mixture of the Celtic race with the Teutonic population as could have exercised any influence either on the language or on the character of the people.

on the language of the new conquerors. The evidences of this are numerous, and, to me at least, very satisfactory, but they do not form a part of our subject upon which I can dwell at present. The German race had a term for those who were of a different race from themselves, which was represented in Anglo-Saxon by the noun *wealh*, a foreigner, and by the adjective *wælisc* or *wylisc*, foreign, but which, as the Romans were the only race quite different from their own with which they had much acquaintance, they applied especially and almost solely to people speaking the Latin tongue. During the middle ages, the term Welsh, in the German languages of the Continent, meant especially French, but was applied also to other neo-Latin dialects; in German of the present day the same word *(wälsch)* is applied peculiarly to the language and people of Italy. It was no doubt for the same reason, namely, that they were a people speaking Latin, that the Anglo-Saxons applied this word to the population they found in Britain, and it probably became extended to what we now call Wales and the Welsh, merely because, when they subsequently became acquainted with them, the Anglo-Saxons confounded the inhabitants of that district with the other old inhabitants of South Britain. You must bear in mind, in considering this question, that our knowledge of the Anglo-Saxon language is after all imperfect, for our nomenclature is made up from written documents of a partial description, and there no doubt existed a great number of words in the Anglo-Saxon language which are now entirely lost. No doubt many words now found in the English language, and especially in the provincial dialects, of which the origin is now unknown, had their equivalents in pure Anglo-Saxon.

If I object to the notion of a Celtic element in our language, I object no less to that of a mixture with any other Teutonic dialect. Our older philologists believed in a modification of the Anglo-Saxon during a certain period which they termed Dano-Saxon, supposing that they traced in it the marks of Danish influence; but this theory has been entirely abandoned by the best of our modern scholars, and there certainly are no proofs that such an influence ever existed.* The language which our forefathers spoke in the middle of the eleventh century was the same Low German dialect

* Of course I do not deny that our local dialects, in the parts occupied by them, may have derived some words from the Danes, but the pure Anglo-Saxon language was certainly not influenced by them. It has been the fashion of late years to ascribe much more to the Danes than I believe them to have any claim to. This, however, is a question the discussion of which would take us too far away from the present subject.

which they had brought with them into the island, with the mere changes which any language would undergo in itself during the transmission, under the same circumstances, through several centuries.

At the period just mentioned, a great political event, the Norman conquest, brought into our island a new language, one of those which had grown out of the language of the Roman empire, French, as it was then talked and written in Normandy; and Anglo-Norman, as this neo-Latin dialect is usually termed, continued during two centuries from that time to be exclusively the language of the aristocracy of England. There were thus two entirely distinct languages, bearing no resemblance to each other, co-existent in different classes of the same nation, for we must not suppose that, for a moment, the Anglo-Saxon, or, as we must henceforward call it, the English tongue, was abandoned or fell into disuse. It was long, indeed, an uncontradicted statement of our historians, that William the Conqueror made a deliberate attempt to suppress the use of the Anglo-Saxon tongue in his new kingdom, and Ingulph, or rather probably the pretender who assumed his name, asserts that it was banished from schools, and that the French or Anglo-Norman was used in its place in teaching children the rudiments of Latin grammar. The former of these statements no longer receives any credit, and the latter is disproved by an abundance of positive evidence. We cannot, indeed, doubt that the Anglo-Saxon grammar of the Latin language by Alfric continued to be used in the English schools until late in the twelfth century. Hicks, the Anglo-Saxon scholar, had in his possession a manuscript of Alfric's grammar, with an interlinear gloss of some of the Saxon words in Anglo-Norman, and from the examples he gives we may probably ascribe them to the first half of the twelfth century. This would seem to show that even a foreigner, employed as a teacher in England, had to use the Anglo-Saxon Latin grammar in his school, although his own knowledge of Anglo-Saxon was so imperfect that he was obliged to add a translation of the Anglo-Saxon words into Anglo-Norman for his own use. Further than this, Sir Thomas Phillipps found among the archives of Worcester cathedral some leaves of a copy of Alfric's grammar, written in the degraded form of the Anglo-Saxon language which prevailed in the middle and latter half of the twelfth century. The Anglo-Saxon language had at this time undergone considerable degradation from the form it presented in the eleventh century. It was rapidly losing its grammatical inflections, and in its words broad sounds were exchanged

for softer and quicker ones. Thus the final *a* was constantly exchanged for *e*, and the prefix *ge* was everywhere turned into *y* or *i*. For *cempa*, a champion, they said *kempe;* for *gemetung*, a meeting, they said *imeting;* and for *gerefa*, a prefect, they would say *ireve*. With this change, however, there was no considerable introduction of Norman words. It was pure Anglo-Saxon as to the substance, but degraded in its forms. Philologists have given to the language in this state of transition the name of semi-Saxon. We can trace its progress in several literary monuments of importance. The latter years of the Anglo-Saxon Chronicle, which was continued to 1145, exhibit the language as already breaking very fast; in the metrical chronicle of Layamon, and in the metrical harmony of the gospels called the Ormulum, which were both probably written in the closing years of the twelfth century, the Anglo-Saxon grammatical forms have undergone an entire change, which is still more complete in the semi-Saxon text of the *Regulæ Inclusarum*, or rule of nuns, in the earlier half of the thirteenth century. It is evident from the character of these, and other literary remains of less importance, that the use of the English language, during the twelfth and first half of the thirteenth centuries, was by no means confined to the lower classes of society, but it prevailed generally among the middle and educated classes, and among the clergy and in the monastic houses, at least in those devoted to females.

It was in the middle of the thirteenth century, when the national spirit of the English people showed itself in the great popular struggle under Simon de Montfort, that the English language, which has now emerged from that transition state under which it has been known as semi-Saxon, at length asserted what we may call its political rights, and reappeared in the court. The political songs, and other writings, composed during the civil strife known as the barons' wars, show us not only two, but three languages, co-existing in this country at the same time. These were, the English, the Anglo-Norman, (or, as it was usually called at the time, the French), and the Latin, of which we need not take the latter into consideration, as it belonged almost exclusively to the clergy.

The long continued existence of what we call the Anglo-Norman language in this country was not a mere accident, but it was a consequence of the political condition of Europe. The feudal aristocracy was united throughout the whole extent of feudalism, by a community of interests as well as feelings, to such a degree, that the nobles of one country felt a closer re-

lationship with those of another than with the unaristocratic classes of their own countries or even with their own sovereign. This was so much the case that, until the spirit of feudal society began to decline, it was no uncommon thing for a baron to hold fiefs in the dominions of several different sovereigns, and to form his alliances sometimes with the barons of one of these countries and sometimes with those of another. A common language was, therefore, a necessary element in the system; and as feudalism had originated in France, and took its greatest development there, French became its universal language. It was, then, not only as the language of the Normans, but as that peculiarly of the feudal aristocracy in general, that French was introduced into England under William the Conqueror, and it was in that character that it continued to be the language of the aristocracy of England until feudalism itself was broken down. It had ceased, however, to be their exclusive language in the thirteenth century. In the latter years of that century, a tract or treatise was written in French or Anglo-Norman verse, forming a sort of vocabulary of that language, and designed expressly for the purpose of teaching it to children. The number of copies of this tract still preserved in MS. show that it was a popular elementary book, and that it was in extensive use. The compiler was Walter de Biblesworth, a man known elsewhere as a writer of French verse and apparently belonging himself to the aristocratic class; he was a friend of the great statesman of the reign of Edward I, Henry de Lacy earl of Lincoln and Salisbury, and compiled the treatise we are speaking of at the request of the lady Dionysia de Monchensey. Thus all the relations of the author and of his book were of an aristocratic character. Now Walter de Bibblesworth states his object to be to instruct the rising generation in the proper use of the words of the French language, and especially in the correct application of the genders, and the French words are explained in English, implying thus that the learner was acquainted with the English language before he began to learn French. We thus ascertain the very important fact that, before the end of the thirteenth century, the children of the aristocracy of England learned English before they were instructed in any other language, or, in other words, that English had become their mother tongue.*

* This very curious monument of the educational system of the middle ages will be printed in a volume of medieval vocabularies, Anglo-Saxon, Anglo-Norman, and English, now preparing for publication at the expense of Mr. Joseph Mayer, of Liverpool, to

Although, therefore, French was no doubt still looked upon as the peculiar language of the aristocracy, a new modification had taken place in the mutual position of the two languages, for, instead of their mere co-existence in the same country, but in two different classes or great divisions of society, we have them now coexistent in the same class. This change marked what may be considered as the birth of modern English literature. The English language now began among the aristocracy and at court to be adopted as that of our national poetry and prose, and to step into the place which had been usurped almost exclusively by the French or Anglo-Norman language during the twelfth and thirteenth centuries. With it, also, began the intermingling of the two languages, in consequence of which a large portion of the Anglo-Saxon language gradually became obsolete.

It is necessary, however, that this process of intermingling and becoming obsolete should itself be explained, for we should form a very erroneous opinion if we supposed, as some who have treated on the subject seem to suppose, that there was any design or plan in the mixture. You will easily conceive how people talking equally among themselves two different languages would be continually tempted to use, in one language, a word or words taken from the other, either because it was a favourite word with them, or, more usually, because it presented a more familiar picture of the object it was used to designate. Much more would this interchange of words take place, in the intercommunication between the class which used both languages and that which used nothing but English in regard of a number of words from the French language which custom had begun to affix to certain objects. Thus, we know well that the Anglo-Saxon table was formed merely by placing a board upon trestles at the time of eating, and that it was designated simply by the name of *a board*. Permanent tables were probably known to the Saxon portion of our population only through the Normans, and as the former constantly heard them spoken of by this French name of *table*, they would naturally learn the word themselves, and, if they did not use it at first indiscriminately for the old description of table as well as the new one, it would become so completely identified with the latter, that we are not surprised at the older English

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whom not only the Historic Society, but the science of Archæology in general, is under so many obligations. These vocabularies are extremely valuable, as illustrating not only the history of our language, but the manners and condition of our forefathers.

word being lost as the old practice was discontinued. In fact the Saxon word for a table can hardly be said to belong to the English language at the present day, yet, though we should be surprised at hearing anybody call a table a board, we still use the word in certain phrases derived from ancient customs, and we speak of a "festive board," and talk of giving people "board and lodging," and of sitting at a council or committee board. Again, we know that an Anglo-Norman would call a sheep a *mutton*, while an Englishman of the Saxon race would call it a *sheep*. Now we know that in feudal times nearly the whole of the animal provisions of the estate was swept off into the castle or mansion of the landlord, where it was consumed in extravagant hospitality or salted down to keep in store for occasions when fresh meat could not be procured. There can be little doubt from what we know of the condition of the people in the feudal ages, that the agricultural population, who among themselves knew the various animals alive by their Anglo-Saxon names, rarely tasted their flesh except when they sat in the halls or kitchens of their landlords, where they would hear it spoken of, and must ask for it, only by its Anglo-Norman name. Hence they would gradually become accustomed to call the animal a *sheep*, and the flesh of it, when dead, *mutton*. Thus we see how our language has become enriched by adopting in some cases the originally synonymous words of the two languages, and giving them a somewhat different meaning. All the usual articles of animal food have fallen under the circumstances of the example just given. We speak of beef, mutton, veal, pork, by their Anglo-Norman names, while we continue to call the living animals by their Anglo-Saxon names of oxen, sheep, calves, and swine. Words connected with cooking have been similarly exchanged. Thus, the Anglo-Saxon word *brædan* or *bredan*, to roast, has disappeared from our language, and the word we have adopted in its place is derived from the Anglo-Norman *rostir*, the modern French *rôtir*. Roasting was in the middle ages practised chiefly with regard to fowls and smaller animals, while substantial meat was much more commonly boiled, perhaps partly from the circumstance that so great a portion of it was salted. Hence the Anglo-Saxon word *seothan*, to boil, held its position in the language much longer than *brædan*; and its representative, to *seethe*, can hardly yet be said to have become obsolete. Nevertheless, it has virtually been long displaced by the Anglo-Norman word, to *boil*. Similarly the Anglo-Saxon word, *hyrstan*, to fry, has been expelled by the

Anglo-Norman equivalent. The adoption of Anglo-Norman words in cookery may be explained by the same causes which influenced the change of the names of meats. The artizan and the manufacturer, on the other hand, have generally preserved the Anglo-Saxon names connected with their occupations, although we find these exchanged sometimes for Anglo-Norman, under circumstances of which it would not be easy to give an explanation. Thus we learn from the vocabularies that the Anglo-Saxon name for a carpenter's plane was *locer*, which appears to have become obsolete early in the Anglo-Norman period, for we have long known no other than the Anglo-Norman name. Indeed, it would be most dangerous to attempt to form any general rule upon such examples as these, for, whatever rule it might be, when we attempt to apply it we should find nothing but exceptions. Thus, from the strictness with which game was preserved by the feudal barons, we might suppose that the different animals which came under that designation would have received Anglo-Norman names, yet the names the animals of the chase still bear in our language, such as a deer, a hart, a roe, a hare, are all Anglo-Saxon, while, singularly enough, among the birds which come under the head of game the partridge has lost its Anglo-Saxon names of *ærsc-henn* or *rephung*, the pheasant perhaps that of *wor-hana*,* and the heron that of *hragra*, in order to take their present names which are purely Anglo-Norman. As war was so peculiarly the business of the feudal aristocracy, we might suppose that at all events the names for arms would be Anglo-Norman, yet we find that this is not the case, for we speak of a *sword* and not of an *épée*, of *bows* and *arrows* instead of *arcs* and *fletches*, and we even usually call the *lance*, the distinctive arm of the knight, by its Anglo-Saxon name of a *spear*. What is still more remarkable, our language has preserved the Anglo-Saxon word *knight* to distinguish the feudal warrior himself, instead of his Anglo-Norman name of *chevalier*. In the derivative from this word, however, although the two court poets of their age, Chaucer and Gower, used the English word *knighthode* for chivalry, the

* It has been said, I know not on what authority, that the pheasant is a comparatively modern importation into our island. I can only say that it was certainly commonly known here in the twelfth century, and I am not aware of any reason for supposing that it was then a novelty. In the treatises on cookery and the service of the table, compiled in the fourteenth century, we have directions for dressing and serving it, as well as for catching it in the books on Venerie. The early Anglo-Saxon vocabularies interpret the Latin *phasianus* by *wor-hana*, which has been conjectured to mean a weed-hen.

French word has subsequently superseded it. When we go to other classes of subjects, the caprice shown in the adoption of words from either language is still more incomprehensible. Thus, it would be difficult to say why, among flowers, we have adopted the Anglo-Norman names of lilies, violets, dandelion, germander, plantain, &c., and have retained the Anglo-Saxon ones of daises, cowslips, thistles, honeysuckles, and a numerous list of others ; or why, in some cases, we have preserved the Anglo-Saxon names of fish, such as whales, seals, lobsters, crabs, eels, &c., when others have been abandoned to adopt in their places such names as salmon, tenches, sturgeons, gudgeons, perches, lampreys, and some others, which are Anglo-Norman. We can indeed discover no general law or rule which influenced in any degree the adoption of particular words from one language or the other. The two languages continued long to exist independently, and people who wrote in English might adopt at their own caprice a word from one or the other.

In one respect, however, these two languages in England stood on a very different footing, for, while the Anglo-Norman words which were finally rejected from our written language, ceased to exist among us with the language itself, a vast number of the Anglo-Saxon words which disappeared from the English language as it was written and spoken in cultivated society, were preserved among the populace and the peasantry, and contributed to form the trivial language of the common people, or, much more extensively, of our provincial dialects. Words are easily rejected from the language of cultivated society, but the tenacity with which the peasantry especially, and the lower classes of the population generally, retain the old words and phraseology of their mother tongue, through many ages, is truly extraordinary. One or two examples have occurred to me which I think deserve to be remembered. The Anglo-Saxon vocabulary of archbishop Alfric, compiled in the tenth century, gives the Latin and Anglo-Saxon equivalents, "*constructio, vel instructio*, hyrdung." The modern Anglo-Saxon lexicographers, puzzled by the Latin words, appear to have been able to make nothing of the Anglo-Saxon word *hyrdung*, and have given it in their dictionaries without explanation. The natural derivation of it would be from the verb *hyrdan*, to guard, or keep. Now, you can hardly pass for any length of time through the streets of our larger towns without seeing, in one place or another, a house in the process of repairing or rebuilding, and you will generally see that it is surrounded with a tolerably

lofty and strong frame-work of boards, for the protection of the work and the workmen. If you ask the latter what they call this wooden frame-work, they will tell you at once a *hoarding*. I have little doubt that this is the identical *hyrdung* of the Anglo-Saxon vocabulary, especially as it is there placed among one or two other words connected with building; and you will thus see that our common builders have actually preserved during the vicissitudes of eight centuries a word which seemed so entirely lost to the world that by them alone we are able to give it an explanation in an Anglo-Saxon dictionary. An English-Latin dictionary of the fifteenth century, known by the title of the *Promptorium Parvulorum*, furnishes us with another example. You will there find, under the letter **L**, the words, "Locchester, wyrm," meaning that *locchester* was the name of a kind of worm, and the Latin equivalent *multipes* is added. Now as the word *worm* had in Anglo-Saxon and Old-English a very extensive meaning, and as the Latin *multipes*, meaning simply an animal with many feet, was not much more definite; the modern editor of the *Promptorium Parvulorum*, Mr. Way, was unable to fix the exact meaning of the English word—and there seemed no means left of ascertaining it, until, two or three years ago, my friend, Mr. Halliwell, walking in a garden in Oxfordshire, accidentally overheard the gardener talking about *lockchesters*, and immediately asking him what these were, received for answer that they were *woodlice*. On a further inquiry he ascertained that *lockchest*, or *lockchester*, was not an uncommon word in some parts of Oxfordshire for a woodlouse, although it was rapidly going out of use. As the *Promptorium Parvulorum* was compiled in Norfolk, this must, in the fifteenth century, have been an ordinary word for a *woodlouse*, and not confined to a particular locality. Again, reading one of the comedies of the age of Charles II., "The Cheats," published in 1662, the scene of which is laid in London, I meet with the following language, put into the mouth of one of the characters: "O my child, my child, thy father is prettie *hoddie* again, but this will break his heart quite." The old dictionaries give the word *hoddy* as meaning hearty, or strong, but I have looked in vain for it in any dictionary of the present day, until I happened to open a glossary of the East Anglian dialect, where I find that the word still exists in the sense of "well; in good spirits." It appears clear, from this and other examples which I could quote from the writings of the same period, that a multitude of words were in general use in the common language of England so late as the latter half of the

seventeenth century, which now exist only in some local dialect. This shows us the great importance, in a philological point of view, if in no other, of collecting and publishing the words of our provincial dialects.

These dialects show us in many ways the curious manner in which the Anglo-Saxon language was broken up for the formation of modern English. It must not be supposed that Anglo-Saxon words became obsolete merely because they were displaced from the English language by Anglo-Norman words, for words of Anglo-Saxon origin were continually displacing one another. In the first place, the Anglo-Saxon language, as I have remarked before, was copious in words, and it often happens that out of a number of names for the same thing, or verbs expressing the same or a similar action, one or two only have survived. In the second place, it seems evident that among the Anglo-Saxons themselves there were numerous words, then only used in popular conversation or in particular districts, which, in the course of time, gained the superiority over their prouder synonyms, and finally superseded them. Hence, while a great number of what are known to have been good Anglo-Saxon words have been expelled from the English language, their places have been taken by others, also no doubt Anglo-Saxon, which are so strange to us that all we can absolutely say of them is, that they are not Anglo-Norman. This, also, will perhaps be best illustrated by a few examples. I will take the first from the language of agriculture. The only word we find used in the Anglo-Saxon writers for a plough is *sulh*, yet we are certain that some such word as *ploh* or *plog*, with this meaning, did exist in that language, not only because we know that plough is not an Anglo-Norman word, but because we find the word *ploh* used once in the Anglo-Saxon laws to signify what was afterwards called a *ploughland*, because an Anglo-Saxon ecclesiastical document speaks of a tax levied by the church on the agriculturists under the title of *plou-ælmesse*, for which another document gives the synonym *sulh-ælmesse*, and because, further, we find the representative of the word in the modern German is *pflug*. What, therefore, must have been in the Anglo-Saxon period only a popular, or an almost obsolete name for a plough, has actually in the modern English language superseded the regular Anglo-Saxon name of a plough, *sulh*, which now only exists in the dialects of the West of England, where a plow is still called by the peasantry a *sull*, *sullow*, or *sowl*.* The Anglo-Saxons had several verbs to signify the operation of

* It is curious that the word *sullow* for a plough, with *bannut* for a walnut, and one

ploughing, such as *erian, fyrian,* and *tilian.* Of these, the first, in the form to *ere* or to *ear,* remained in general use in the English language until the sixteenth century, and is perhaps still in use in some of the local dialects. *Fyrian* is only retained in the sense of to furrow, or make furrows; and *tilian* remains in the more general sense of to *till* the ground. We now, in English, call the operation only *ploughing,* from the name of the machine used in performing it. Again, the only Anglo-Saxon word we know for a window is *eage-thyrl,* meaning literally an eye-hole, from which we derive a more vivid picture of the sort of openings by which the interior of an Anglo-Saxon house was lighted than a long description would convey to us. Larger openings for light came into use probably in Norman times, and they, as well as all windows, were called by the Anglo-Normans *fenestres,* in modern French *fenêtres.* It is a curious circumstance that the Teutonic dialects on the Continent have generally adopted the French word, which of course represents the Latin *fenestra;* in modern German a window is called a *fenster.* Yet the English language has thrown off what would have been its Anglo-Norman word *fenester,* and has retained in its place not the Anglo-Saxon word we know, but another, which does not occur among the words of the Anglo-Saxon language that have been preserved, though I think that the English word *window* is found as early as the thirteenth century, and it is doubtless a purely Anglo-Saxon word, and bears the same relation to *wind* which the Spanish word *ventána* for a window bears to *viento.* Again, among the Anglo-Saxon names for a sword are *sweord, seax, bill, brand, mece,* and *ord.* Of these, the last signified literally the edge of a weapon, and it and the three preceding words belong properly to the language of poetry, and therefore soon became obsolete. The word *seax* has also been lost, and *sword* has superseded all the others. The principal Anglo-Saxon words for an arrow were *arewa, fla, sceaft,* and *strœl.* The first is the only one of the four which remains in its original sense, although *fla* or *flo* was retained till the fifteenth century, and in Sussex they still call an arrow a *streal.* The common

or two other words, now peculiar to the dialects in the west of England, and not found, as far as I know, in any of the old English writers, occurs in a Latin and English vocabulary of the earlier part of the fifteenth century, printed in the same volume of vocabularies mentioned in a former note as preparing for publication under the auspices of Mr. Mayer, and evidently compiled in that part of the island. This would seem to show that even the verbal peculiarities of the principal English dialects are much older than we might otherwise be led to suppose, and perhaps even this has some connection with the history of the word *sulh* and *plough,* as given in the text.

Anglo-Saxon names for a river, taking them in alphabetical order, were, *becc*, *broc*, *burne*, *ea*, *flod*, *rith*, or *ryth*, and *stream*. The precedence of all these has been taken by the Anglo-Norman word *rivere*. The word *ea*, which appears to have been the most general Anglo-Saxon word for a river, has only remained in the innumerable names of localities, into the composition of which it enters. *Rith* is also lost. *Broc* remains in the modern *brook*, while *burn* is preserved in a similar sense in the dialects of the North of England, and *becc* continues to exist in the *beck* of some of the northern provincial dialects, and in the *bache* of the dialects of the Welsh border. Of the ordinary Anglo-Saxon names for a hall, *heal*, *caffertun*, *inburh*, *sal*, and *sele*, the first is the only one preserved in the English language, although the two last might have been supposed to have had the greater chance of lasting, as being identical with the Anglo-Norman word *sale*. Another curious instance of the capricious character of these word-revolutions and vicissitudes in our language is furnished by the names of the rabbit. It is somewhat remarkable that the Anglo-Saxon dictionaries give us no word for a rabbit, but from the thirteenth to the beginning of the last century the common English name for this animal was a *conig* or *cony*. There is some room for doubt whether this word be Anglo-Norman, in which language a rabbit was called a *connil* or *connin*, or whether it be of Anglo-Saxon origin, for the same animal is still called in German *kaninchen*. Both, no doubt, represent the Latin *cuniculus*. But this word *cony*, for some cause or other, was in the last century entirely superseded by that of *rabbit*, which must no doubt have been an Anglo-Saxon word, because it is found in another Low German dialect, the Dutch, under the forms *robbe* and *robbekin*. It is found in the *Promptorium Parvulorum* of the fifteenth century with the signification of a young rabbit —"Rabet, yonge conye, *cunicellus*." I do not remember having met with the word in the English language at an earlier period. I may quote another example of the movements and vicissitudes of words in our language from the nomenclature of birds. The Anglo-Saxon vocabularies give to the Latin word *turdus*, the two interpretations *scric* and *stær*, and they explain the Latin *merula* by *thrisc* or *throsle*. Yet the Latin *turdus* is usually understood as meaning a thrush, and *merula* as signifying a blackbird. Under the Anglo-Normans the word *mauvis*, anglicised into *mavis*, was introduced to signify a thrush, and almost superseded the latter word in the English language, although *throstel*, or more usually

throstel-cock, continued to be used. At the same time, the Anglo-Norman word *merle*, from the Latin *merula*, came in to signify a blackbird. This shows that the original meaning of the Latin *merula* was well known, and would lead us almost to suppose that the Anglo-Saxons may have meant a blackbird by *thrisc* and *throstle*. The English glossaries of the fifteenth century still interpret *merula* by *thrystel-cock*, and *mauvis* continued to be the English word for a thrush, and it long held its place in the language of literature. Nevertheless, the Anglo-Saxon words *thrush* and *throstle* have finally regained their position as the sole acknowledged names, in the English language, of the song-thrush, and have expelled their Anglo-Norman equivalent *mavis*, and in this case it is the Anglo-Norman word that remains in our dialects. In the north of Essex, and I believe in other parts of East Anglia, a singing thrush is still called a *mawis*. One of the Anglo-Saxon equivalents of the Latin *turdus* is preserved in the *schreech*-thrush, a provincial name for the missel-thrush; and the other, *stare*, is now used in the signification of a starling. Again, the names cowslip, or cowslop, (*cusloppa*,) and oxslip *(oxan-slippa)*, are purely Anglo-Saxon, and have preserved their place in the language—though not quite undisputed, for another word *paigle*, the derivation of which seems very uncertain, though its form appears to bespeak an Anglo-Norman origin, had intruded itself into the English language before the sixteenth century. There is some reason for believing that the *paigle* was originally the oxslip. It was a word in common use among the English writers of the Elizabethan period; yet it has now dropped into a provincial word, and, singularly enough, in Essex it seems to have changed places with cowslip. In the neighbourhood of Saffron-Walden the name *paigle* is given to the common cowslip (the *primula veris)*, while the oxslip (the *primula elatior)*, which is very abundant there, is called a *cowslip*. The language of natural history was especially rich and copious among our forefathers, whether Anglo-Saxon or English, which seems to show the existence among all classes, and at all periods, of a great love for nature, and a tendency to observe natural objects. In the comparatively small proportion which remains of the popular language of the Anglo-Saxons, we find numerous synonyms for plants, animals, birds, &c., many of which have been since lost, though some are preserved in a remarkable manner, and where we should least expect it. It is from this class of words especially that our provincial dialects are enriched.

Thus, our Anglo-Saxon forefathers called a grasshopper a *gœrs-hoppa* (grass-hopper), or a *gœrs-stapa* (grass-stepper), or a *hama*, or a *hil-hama*, or a *secge-scere* (sedge-shearer), the first of which names only is preserved in the English language, and I am not aware that any of the others exist even in our local dialects. I find a woodlouse called, in vocabularies of the fifteenth century, a *locchester*, a *lokdore*, and a *welbode*; and in those of the sixteenth a *cheselip*, or *cheslop*, a *kitchin-bole*, and a *woodlouse*. Of these, the last only will be found in a dictionary of modern English, but I have already remarked that the name of *lockchester* is preserved among the peasantry of Oxfordshire, and I may add, that the peasantry in the North of England still call a woodlouse a *kitchen-ball*, and that those of the Southern dialects call it a *chissel-bol*, which is perhaps the representative of *cheslop*. The other two names appear to have become quite obsolete. In the *Nomenclator*, a copious Latin and English vocabulary, published in the year 1585, we have three synonyms for the glowworm, namely, *glowbird*, *glowworm*, and *lightworm*. I think that I have heard a glowworm called a *glowbird* in some one of our local dialects. The same vocabulary gives to a well-known plant, the *leontodon taraxacum*, the several names following: *dandelion*, *priest's crown*, *swine's snout*, *monk's head*, *dog's teeth*, and *common cicorie*. The first of these names, which is derived from the French, is the only one of them now acknowledged in the English language; I am not aware that any of the others are in use. The same vocabulary gives as synonyms, *libbard's bane* (i.e. leopard's bane), *wolf's bane*, and *monk's hood*. All these three names of plants are still preserved, but the first is applied to the *doronicum pardalianches*, and the two others to the *aconitum napellus*. Two names of the latter are recorded in the vocabularies of the Anglo-Saxon period, *on-red* and *thung*, neither of which is preserved in the language. These few examples, which might be multiplied almost infinitively, will, I think, sufficiently explain how words have disappeared, and reappeared, in our language, and in its provincial dialects, and at the same time show that the further investigation of this part of the subject would not be without interest.

But it is here a digression, which I must follow no longer. As I have already stated, the two languages representing Anglo-Saxon and Anglo-Norman, but which at this period we may better describe as French and English, continued to exist in England independently during the whole of the fourteenth century, although there was a constant interchange

of words going on between them. I do not mean to say that this interchange was then a permanent one, although a certain number of Anglo-Norman words had already been firmly engrafted on the English tongue. We have no means of knowing what was the exact character of the language of popular conversation at this period, which we may, however, suppose to have been still very decidedly Saxon; but we know that an English writer used just as many French words as he pleased, or as suited the class of readers to whom he addressed himself. Thus, one of the most remarkable poems in our language, the Visions of Piers Ploughman, which was put forth as the grand proclamation of a demand for popular reform and of the doctrines of popular freedom, is written not only in a language which contains a very small number of Anglo-Norman words, but it is composed in the same form of alliterative verse, without rhymes, which was peculiarly characteristic of pure Anglo-Saxon poetry. This sudden reappearance of the ancient Anglo-Saxon form of versification in the middle of the fourteenth century is itself a remarkable phenomenon, and it is an equally curious circumstance that this description of versification, which became thenceforward for some time popular among the people, is generally filled with a great number of purely Anglo-Saxon words, of a sort which we had long missed in English literature, and which we had every reason for believing had long become obsolete. Yet it is not likely that men who wrote for popularity would use obsolete words, which they would hardly be likely to understand themselves, and which certainly would not be understood by their hearers or readers. We must, therefore, conclude that even down to the end of the fourteenth century, "among the people," the mass of the words of the Anglo-Saxon language, much of its phraseology and construction, and even its forms of versification, continued to exist.

On the other hand, when people wrote for the aristocracy, or for the court, they adopted the French forms of verse, and filled their language with what we should now consider an extravagant proportion of French words. Such is the case in a great degree with Chaucer, who has been very erroneously termed "a well of English undefiled;" and the reason why the writings of Chaucer are more easily understood by people in general than Piers Ploughman, or many of the other literary monuments of the time, must be sought in the circumstance that a great proportion of the obsolete words in Chaucer are French, while nearly all those in the other

writers alluded to are Anglo-Saxon, and as most modern readers have some knowledge of the French language, but very few know Anglo-Saxon, they are naturally less embarrased by the verses of the old court poet than by those of the man of the people.

It will thus be understood that at the end of the fourteenth century the English language was in a very unsettled condition, and that in the hands of writers of different class or rank it assumed every variety of character, from that which presented the pure Anglo-Saxon element almost unmixed to that which was more than half French. Immediately after this period the use of the French language in our island was entirely superseded by the English. It was the fifteenth century, low as it stood in literary character, which performed the great work of purging and purifying. By a process which we cannot distinctly trace, and which we certainly cannot clearly explain, though it appears to have been in a great measure spontaneous, the English language, during the fifteenth century, rejected a very considerable proportion of the French words with which it was encumbered, and at the same time dropped an equally large quantity of superfluous Anglo-Saxon, which now became entirely obsolete, or fell, as I have just shown, into our local dialects. The English language was also undergoing another change during this period, which we must probably ascribe, in a great measure, to the revolution which was taking place in the social condition, and to the more active movement in commerce and politics. I have told you how, in the course of the twelfth century, the Anglo-Saxon language underwent an organic change in its verbal forms and inflections. Although the latter, however, were greatly simplified, and although the degradation continued during the thirteenth century, they were not entirely lost; and the English language during the fourteenth century possessed a perfect grammatical construction, with regular inflections, indicating cases and numbers both of nouns and adjectives, and of numbers and persons of verbs, which are never transgressed in the manuscripts except by the mere carelessness of the scribes. These inflections, represented chiefly by the final *e* and *en*, will be found strictly observed in the language of Piers Ploughman in the middle of the fourteenth century, and they are no less carefully observed in that of Chaucer at the end of that period. It is, in fact, through ignorance of the nature of those inflections, and of the grammatical system of the English language in the fourteenth century, that the editors of our ancient poet, from the sixteenth century to the

nineteenth, have done nothing but make confusion of his language and ruin the harmony of his verse. But immediately after Chaucer wrote, very early in the fifteenth century, the grammatical forms of the language began to be neglected, and people, pronouncing the words apparently more quickly, first ceased sounding the final *e* of the inflections, and then let it drop altogether. The fifteenth century, in fact, was equally a period of transition from the condition of our language in the fourteenth century to modern English, as the twelfth century had been a period of transition from Anglo-Saxon to the English of the middle period. The invention of printing no doubt contributed towards the final purification of the English language, and to the settlement of its forms. In the first half of the sixteenth century, the English language, purged of the superfluous French and half-obsolete Anglo-Saxon which had previously encumbered it, and with very few grammatical inflections of any kind, assumed a form which prepared it for the glories of the Elizabethan period, and the language of Shakespeare is so well known to you all, that I feel sure that it is unnecessary for me to follow its history any further.

I will, however, briefly point out a new danger to which the English language was exposed in the sixteenth century. The revival of learning was followed in England by an increased activity in scholastic education, and by an extraordinary reverence for the classical languages of antiquity. This soon assumed the character of a fashionable and exaggerated pedantry, and people began, both in conversation and writing, to interlard their English with Latin words, to which they merely gave an English form. In fact, as most writers and readers of books were now almost as well acquainted with the Latin language as with their own, the former began to assume towards it very much the same position which Anglo-Norman held towards Anglo-Saxon at an earlier period, and as each writer introduced into his English just as many Latin words as he pleased, it might have been a question at one time whether the language we were destined finally to speak would not have been a sort of mongrel between Latin and English. This affectation of Latin reached its greatest height in an age worthy of it, the reign of James I., after which it began rapidly to disappear, and, fortunately, but a very small number of the Latin words which had thus been intruded into our language have been retained. But in one respect this dragging of the English language into an unnatural relationship with the Latin language exercised a disastrous influence on

its future. When men began to study the English language, and to seek and treat of its grammatical rules, they lay under a prejudice which had grown up with the Latinists, and which, unfortunately, had not died with them, and, forgetting that English was a language in itself, they took it for granted that its grammar was merely an English edition of Latin grammar, and where they found that the English forms as they existed did not agree with the rules of Latin grammar, they attempted to force them into concordance. This mistake has spoilt all the English grammars which have been published previous to our own days, and, unfortunately, we are not yet emancipated from it; nor shall we be emancipated until the language of Alfred the Great, and that of Piers Ploughman and Chaucer, are more generally taught in our higher schools and colleges. This is certain, that our grammarians and lexicographers have, during the last two centuries, been laboring in their ignorance to reject from the English language some of its purest and best phraseology.

ON THE LEPIDOPTEROUS INSECTS OF THE DISTRICT AROUND LIVERPOOL.

By Charles Stuart Gregson.

(Read 19th March, 1857.)

(Continued.)

PART V. containing the Geometridæ.

PART VI. containing the Tortricidæ.

For the preceding portions of this paper the reader is referred to vol. vii. page 237, which contains the true Noctuidæ; and vol. viii. page 158, which contains the diurnal Lepidoptera, the Sphingidæ, the Bombycidæ, and the Pyralidæ. Part vii. which will contain Crambidæ and Tineidæ is reserved for the next volume.

PART V. Section 9.

Heterocera.

Family 1. Geometræ.

Genus 1. Geometra, Linn.

G. papilionaria, Linn.—The larvæ not uncommon in April, on young Birches. Bidston Hill, Woolton, &c.

Genus Hemethea, Dup.

H. cythisaria, W. V.—Plentiful in Jackson's Wood, and at Bidston Hill. Flies at dusk. July.

Genus Chlorissa.

C. putataria, Linn.—Abundant in lanes.

C. æstivaria, Esp.—In lanes at dusk. June and July.

Genus Metrocampa, Lat.

M. margaritata, Lin.—Bidston plantation, Birchwood, and Hale. July. Dusk.

Genus Ellopia, Steph.

G. fasciaria, Lin.—Larvæ on Scotch firs April and May. Prenton wood, Bidston; at sugar in July.

Genus Ourapteryx, Leach.

O. sambucaria, Lin.—Pigue Lane, Woolton. July.

Genus Rumia, Dup.

R. cratægata, Lin.—Everywhere in thorn hedges.

Genus Pericallia, Steph.

P. syringaria, Lin.—Hale, Warbrick Moor. Dusk. July.

Genus Eurymene, Dup.

E. dolobraria, Lin.—Plantations, Rock Ferry, Dacre Park. Dusk.

Genus Epione, Dup.

E. apiciaria, W. V.—Not uncommon on the coast. August. Sugar, and flies at dusk.

E. parallelaria, W. V.—Plantation near Wallasey Mill.

Genus Ennomos, Dup.

E. illunaria, Hub.—Bidston, Hale, Warbrick Moor, Upton, and Speke. April and July.

E. lunaria, W. V.—Warbrick Moor, Hale, and Woolton. April and July.

E. erosaria, W. V.—Bidston, Upton, and Hale. September at light.

E. fuscantaria, Haw.—Bidston and Walton. September.

E. tiliaria, Hb.—Old Swan, Clifton Park, at light plentiful. September.

Genus Odontopera, Steph.

O. bidentata, Lin.—Plentiful about pine wood.

Genus Crocallis, Tr.

C elinguaria, Lin.—Thorn hedges, not scarce. July.

Genus Himera, Dup.

H. pennaria, Linn.—Bred by Mr. Edmondson, fed upon hollyhock. Plentiful at gas lamps. West Derby, Aigburth. October.

Genus Mæsia, St.

M. favillacearia, Hub.—Simonswood moss, Stourton. June.

Genus Macaria, Curt.

M. liturata, Lin.—Hale, Lydiate, and Dacre Park.

Genus Halia, Dup.

H. wavaria, Lin.—Plentiful in gardens.

Genus Numeria, Dup.

N. pulveraria, Lin.—Not scarce at Prenton, Oxton and Stourton. May.

Genus Fidonia, Stephens.

F. atomaria, Lin.—Abundant on the mosses; spring and summer.

F. plumaria, W. V.—Local upon Rainford moss, and upon a small moss near Eccleston. August.

F. piniaria, Lin.—In profusion in Kirby wood, and may be taken in the pine woods in Worral, July.

Genus Eupisteria, Boisd.

E. heparata, W. V.—Bidston Plantations, summer.

Genus Anisopteryx, Steph.

A. æscularia, W. V.—May be bred from curled sallow leaves. All around the district; is difficult to find in early spring, on tree boles and palings.

Genus Hibernia, Lat.

H. leucophæaria, W. V.—In oak woods, Eastham, February and March.

H. rupicapraria, W. V.—Plentiful in old lanes, sitting upon thorn hedges, from 9 to 11 p.m.

H. progemmaria, Hub.—Abundant on thorn hedges in early spring, search with a lanthorn.

H. aurantiaria, Esp. — On hedges around Aigburth and West Derby, occasionally at lamps.

H. defoliaria, Lin.—Plentiful at gas lamps in the autumn.

Genus Phigalia, Dup.

P. pilosaria, W. V.—Plentiful under stone copings in March and April, and at gas lamps.

Genus Nyssia, Dup.

N. zonaria, W. V.—Plentiful on the sandhills at Crosby and Wallasey. March and April.

Genus Biston, Leach.

B. prodromaria, Lin. — I have frequently taken this species at Bidston lighthouse, flies at the lanthorn. March and April.

B. betularia, Lin.—Plentiful at Bidston and West Derby.

Genus Boarmia, Tr.

B. repandata, Lin.—Abundant, especially about Prenton. July.

B. rhomboidaria.—Abundant where ivy grows. June and July.

Genus Hemerophila, Steph.

H. abruptaria, Thunb.—May be found in fir woods, but especially in out-houses near fir woods. Summer.

Genus Cleora, Curt.

C. lichenaria, W. V.—Wherever the trees are covered with Lichen, as at Prenton, Frankby, Hooton, and Spittal. June.

Genus Tephrosia, Boisd.

T. consonaria, Hub.—Single specimen from the neighbourhood of Upton.

T. crepuscularia, W. V.—On tree boles, Hale and Hooton. April.

T. punctularia, Hub.—Plentiful at Croxteth and Knowsley. April.

Genus Gnophos, Boisd.

G. quadripustulata, Don.—Plentiful on the rough ground between Poulton and Wallasey. July. Beat gorse bushes.

G. obscuraria, W. V.—Plentiful in the lane between Tranmere Hall and Prenton wood. July.

Genus Phasiane, Dup.

P. palumbaria, W. V.—In profusion where gorse grows. July.

Genus Lozagramma, St.

L. petraria, Esp.—Very abundant in Eastham and other woods. May.

L. ineolaria, W.V.—Common on the sand hills throughout the summer.

Genus Anaitis.

A. imbutaria, Hub.—Plentiful upon Simonswood and Bickerstaffe mosses.

A. plagiata, Lin.—Childwall lane. July.

Genus Eubolia, Bdv.

E. cervinata, W.V.—Bidston.

E. mensuraria, W. V.—Common on waste lands.

E. bipunctaria, Fab.—In July, 1845, I took several poor specimens at Hoylake. I have not collected there since.

E. multristrigaria, Haw.—Plentiful under tufts of grass in March.

Genus Cidaria, Steph.

C. didymaria, Lin.—Everywhere.

C. erutaria, Boisd.—Stourton. July, on stone walls and bolls of firs.

C. salicaria, Hub.—Bidston Hill and Stourton. August.

C. ferrugata, Lin.—This insect is generally confounded with *Ferrugaria*, Boisduval, which is a variety of *Unidentaria*, Haw; it always occurs on hilly places, where heath and fern grow; is very distinct.

C. unidentaria, Haworth.—Abundant everywhere

C. pectinitaria, Fuessly.—Plentiful in woods where fern grows. June and July.

C. montanata, W. V.—Common everywhere in summer.

C. fluctuata, Lin.—Found everywhere.

C. propugnata, Fab.—Rather local, but plentiful in many thorn hedges. Saughal, Claughton, Wavertree. July.

Genus Thera, Steph.

T. firmaria, Hub.—Not scarce in Prenton wood, July.

T. simulata, Hub.—In fir woods, summer.

Genus Anticlea, Steph.

A. derivata, W. V.—In lanes and hedges between Oxton and Prenton. April.

G. badiata, W. V.—Where brambles grow. April.

Genus Steganolophia, Steph.

S. ribesiaria, Dup.—Plentiful, Hale and Crosby.

Genus Harpalyce, Steph.

H. suffumata, W. V.—Eastham and other woods.

H. silaceata, W. V.—Hale, Ditton, and Rainhill. June.

H. ocellata, Lin.—Plentiful at Wallasey. July.

H. galiata, W. V.—Common on the coast. Summer.

H. fulvata, W. V.—Plentiful on the coast. August.

H. chenopodiata, W. V.—Egremont and Rock Ferry.

H. marmorata, Hub.—Occurs in gardens, not plentiful.

H. pyraliata, W. V.—Plentiful in woods. June.

H. populata, Hub.—Stourton Quarry. August.

H. achatinaria, Hub.—Plentiful everywhere. July, August.

H. russata, W. V.—Plentiful in fir woods and plantations. August.

H. immanata, Haw.—Not so plentiful as the last species, but generally found with it.

Genus Phæsyle.

P. miata, Lin.—Where willows and sallows grow. July.

P. psittacata, Fab.—Eastham wood, Knowsley, and Speke. August.

Genus Ypsipetes, St.

Y. impluviata, W. V.—Where alders and willows grow. May and July.

Y. elutata, W. V.—Abundant in lanes.

Y. rubidaria, Bond.—In damp places where willows grow. Kirby, Hargrave Hall, and Woolton. July.

Genus Cheimatobia, Steph.

C. dilutata, W. V.—Plentiful in woods. September and October.

C. autumnaria, Boisd.—Knowsley, near the quarry. October.

C. boreata, Hub.—Bidston birch plantations. October.

C. brumata, Lin.—Everywhere in autumn.

Genus Lobophora, Curt.

L. lobulata, Hub.—Not uncommon in the woods around Kirkby and Simonswood in April.

L. sexalisata, Hub.—One taken in Croxteth wood. May.

Genus Triphosa, Steph.

T. dubitata, Lin.—May often be observed upon ragwort flowers in August and September.

T. certata.—I think this was taken some years ago, near Runcorn, but that will be a mile or two out of our district.

Genus PHIBALAPTERYX, St.

P. lignata, Hub.—Plentiful around lamps at Otterspool, and in profusion on Bidston marsh. July.

P. gemmaria, Hub ?—Only two specimens have yet been taken, the first was taken by Mr. Diggles, at Birkenhead.

Genus EUCOSMIA, Steph.

E. undulata, Lin.—Eastham wood, among the large ferns. July.

Genus CAMPTOGRAMMA, St.

C. bilineata, Lin.—Abundant everywhere.

Genus MELANIPPE, Dup.

M. alchemillaria, Hub.—Plentiful in July.

M. amniculata, Hub.—Not uncommon about Flaybrick Hill and Noctorum.

Genus EMMELESIA, Steph.

E. rivulata, W. V.—Plentiful at New Brighton and at Broad Green. June.

E. hydraria, Tr.—Plentiful in old lanes where alders grow. June.

E. decolorata, Hub.—Plentiful with *Hydraria*.

E. albulata, Fab.—In profusion on marshy ground, flies about 4 p.m.

E. bifasciata, Haw.—Sparingly all around the district, especially on the borders of the sand hills. Requires beating out. July, August.

Genus ZERENE, Steph.

Z. albicillata, Lin.—Halewood and the Boorswood, Hale.

Z. rubiginata, W.V.—Plentiful in all the lanes leading on to the mosses. The variety *plumbata*, Curtis, is found freely in some places.

Genus ABRAXAS, Leach.

A. grossulariata, Lin.—Common in hedges.

A. ulmata, Fab.—In profusion in Croxteth plantations. July.

Genus BAPTA, Steph.

B. temerata, W. V.—Hale and Eastham, only a few taken. June.

Genus CABERA, Dup.

C. pusaria, Lin.—Common everywhere. July.

C. exanthemaria, Esper.—With *Pusaria*. July.

C. strigillaria, Esper.—Not uncommon in Kirkby Wood, &c.

Genus Ephyra, Dup.

E. punctaria, Lin.—Hale, Eastham, and Bidston. Sits upon the dead leaves in woods, hence is difficult to observe.

Genus Eupethecia, Curtis.

E. linariata, W. V.—Plentiful where toad flax grows.

E. pulchellata, Steph.—Occurs sparingly all around the district. *Its food is not yet known.*

E. rectangulata, Lin.—In old orchards, local, but plentiful. Frankby, Linacre, and Hale.

E. tenuiata, Hub., 394.—Where sallows are plentiful. June. Feeds in the catkins.

E. plumbeolata, Haw.—Not uncommon amongst the *Myrica gale* on the mosses. July.

E. pygmeata, Hub.—Widely spread, but rarely taken in any quantity; flies in open places in woods, about 3 p.m., has no affinity to this genus.

E. satyrata, Hub. — Not uncommon on one part of Simonswood moss, near the plantation, and flies from six to dark. June.

E. abbreviata, Wood, 660.—Plentiful at the top part of Eastham wood, in April.

E. exiguata, Hub. Wood, 659.—Abundant in woods. April.

E. innotata, Knoch.—A few have been taken near the sand hills, suspected to feed upon the vetch in hedges.

E. indigata, Hub.—Prenton and Stourton woods, on fir trees. May.

E. nanata, Hub.—Plentiful where heather grows. July.

E. castigata, Hub.—Plentiful in lanes where inflated catch fly grows. June.

E. vulgata, Haw. Wood, 666.—Abundant about gardens.

E. absynthiata, Lin.—Ragwort flowers and in gardens.

E. minutata, Hub.—Prenton hill and wood, flying over heather. Evening.

E. assimilata, Doub.—On the coast about ragwort flowers at dusk.

E. centureata.—Common on the coast! !

E. succenturiata, Lin. Hub. 459 variety *Subfulvata*, Haw. Wood 675, and all the intermediate varieties, *Disparata*, Hub. 246 *Oxydata*, Tr. *Cognata*, St. &c., are taken together all around the district lanes. The light varieties are taken more freely than the dark ones, when on the wing at night.

E. subnotata, Hub.—Prenton, around the farm houses and gardens.

E. venosata, Hub.—Taken by Mr. Nixon, at Hale.

E. pumilaria, Hub. Wood 657.—Amongst gorse at Bidston Hill and New Brighton. April and August.

E. sparsata, Hub.—Taken amongst sallows, growing on the road side between Bromborough and Eastham.

Genus Dosethia, Dup.

D. virgularia, Haw.—Not uncommon in hedges.

D. scutularia, Hub.—Freely in mixed hedges where nettles grow.

D. reversaria, Tr.—Plentiful in lanes.

Genus Acidalia, Tr.

A. osearea, Hub.—In hedges near Leasowe sand hills.

A. holsericearia, Parr. — Below Bidston plantation, looking towards Moreton, in plantations where the ground is swampy.

A. luteata, W. V.—Bidston plantation, June.

A. candidata, W. V.—Eastham and Hooton, where hazles grow.

A. sylvata, W. V.—Bromborough wood, and beyond Hooton park in the rough plantations.

A. nitidaria, Boisd.—Plentiful on the mosses in June.

A. subsericearia, Haw.—Not uncommon on the pasture lands near the sand hills at Leasowe. A few taken in lanes around Bidston, &c.

A. remutata, Lin.—Plentiful in hedges in lanes.

A. aversata, Lin.—Abundant with *Remutata*.

Genus Pæcilophasia, Steph.

P. marginata, Lin.—In profusion in woods, Hale, Croxteth, and Kirkby. &c. June.

Genus Timandra.

T. imitaria, Hub.—Abundant in hedges about West Derby and Bidston hill.

Genus Bradyepetes, Steph.

B. amataria, Lin.—A few have been taken around Hale. First by Mr. Nixon. July.

Genus Strenia, Dup.

S. clathrata, Lin.—On the canal banks near Maghull. July.

Genus Hyria, Steph.

H. auroraria, Hub.—Not uncommon on the mosses in July, is confined to the dry ditch banks, flies in the afternoon.

Genus Chesias, Tr.

C. spartiata, Fab.—Plentiful amongst the broom growing beyond Hooton, and at Bromborough. October and November.

End of Geometra.

PART VI. Section 10.

Family 1. Tortricidæ.

Genus Halias, Tr.

H. prasinana, Lin.— Plentiful in woods where sallows grow, as at the Boorswood, Hale. June.

Genus Sarrothripa, Curtis.

S. rewayana.—A few have been taken, principally in plantations near the coast.

Family 2.

Genus Tortrix, Lin.

T. pyrastrana, Hub.—Plentiful.

T. xylosteana, Lin.—Plentiful in a nut hedge at Croxteth wood. August.

T. sorbiana.—Only four specimens have been taken. Little Britten wood.

T. rosana, Lin.—Abundant everywhere.

T. cinnamoneana, Tr.—Bromborough wood. Not plentiful.

T. heparana, W.V.—Abundant in hedges.

T. ribeana, Hub.—With *Heparana.*

T. unifasciana, Dup. Sup.—Plentiful in lanes.

T. spectrana, Tr.—Plentiful where coltsfoot grows. July.

T. viburnana, W. V.—Abundant on the mosses. July.

T. icterana.—Abundant amongst Knapweed. July, August.

T. viridana, Lin.—Abundant in oak woods. July.

T. ministrana, Lin.—Plentiful at Croxteth and other woods. July.

T. adjunctana, Tr.—Plentiful around old pits, and in mixed hedges. Anywhere.

Genus Dichelia, Guen.

D. grotiana, Fab.—A few on the dry parts of the mosses. July.

Genus Amphysa, Curt.

A. gerningana, W. V.—Plentiful on Bidston Hill between the lighthouse and the mill. Flies about 9 a.m. and 5 p.m. July.

A. prodromana, Hub.—Stourton quarry, flies at 11 a.m. when the sun shines.

Genus Leptogramma, Curt.

L. literana, Lin.—In old woods, especially where there are old lichen covered thorn trees growing. September.

Genus Peronia, Curtis.

P. favillaceana, Hub.—Plentiful where beeches grow. September.

P. mixtana, Hub.—Plentiful on dry banks, where gorse and heath grow. Bidston, Stourton, &c. October.

P. schalleriana, Lin.—Not abundant, mixed hedges about Prenton. August.

P. comparana, Hub.—Abundant in hedges. August.

P. potentillana, Cooke N. S.—Plentiful on strawberries, West Derby. July and September.

P. caledoniana, Bentley.—Plentiful amongst *Myrica gale* on the mosses.

P. abildgaardana, Fab.—Plentiful amongst roses and thorns. August.

P. permutana, Dup.—Plentiful amongst the spiney rose on the sand hills. August.

P. hastiana, Lin.—Plentiful on sallows around old pits, Bidston. Sept.

P. furrugana.—Plentiful at Eastham wood. September.

P. tristana, Hub.—A few taken from sallows near Eastham. August.

P. aspersana, Hub.—A great many bred from meadow-sweet, is also to be found amongst the sallows on the sand hills.

Genus Teras, Tr.

T. effractana, Tr.—Croxteth wood. September.

T. caudana, Fab.—Croxteth wood and Prenton lane, in profusion.

Genus Dictyopteryx, Steph.

D. contaminana, Hub.—Abundant in hedges. August.

D. læflingiana, Lin.—Plentiful in old lanes and edges of woods.

D. holmiana, Lin.—Abundant in the thorn hedge on the sand hills beyond New Brighton. August.

D. bergmanniana, Linn.—In profusion amongst the roses on the sand hills, July, August.

D. forskaleana, Lin.—Plentiful throughout the district.

Genus Argyrotoza, Steph.

A. conwayana, Fab.—Plentiful in lanes. June.

Genus Ptycholoma, Steph.

P. lecheana, Lin.—Plentiful in woods.

Genus Ditula, Steph.

D. semifasciana, How. Bred freely from willow leaves collected at Crosby sand hills.

Genus Penthina, Tr.

P. picana, Tr.—Plentiful at Kirkby wood, and at the Hut of Huts.

P. betuletana, Haw.—Kirkby wood amongst the birches.

P. pruniana, Hub.—In mixed hedges anywhere. July.

P. ochroleucana.—In gardens, July.

P. cynosbana, Lin.—In gardens on roses, anywhere.

P. ochromelana, Guen. — On the fallows around Simonswood Moss. June, July.

P. marginana, Haw.—A few specimens only with *Ochromelana.*

Genus Antethesia, Steph.

A. salicella, Lin.—I found this insect freely near Huyton, in a mixed hedge.

Genus Spilonota, Steph.

S. ocellana, W. V.—Old thorn hedges, July.

S. aceriana, F. R.—Not uncommon at Egremont.

S. dealbana, Fr.—Rock Ferry to Bromborough Pool on the river bank sallows.

S. neglectana, Dup.—Marsden's road, Liscard, poplars, plentiful. July.

S. amœnana, Dup. Sup.—Amongst the roses on the sand hills, abundant. July, August.

S. suffusana, Kuhl.—Not scarce around old ponds near Bidston. July.

S. rosœcolana, Doub.—With *suffusana.*

S. roborana, W. V.—Where roses grow. July, August.

Genus Pardia, Guen.

P. tripunctana, W. V.—Amongst roses in gardens. June, July.

Genus Notocelia, Steph.

N. udmanniana, Lin.—Common where brambles grow. July.

Genus Sericoris, Tr.

S. cespitana, Hub.—Abundant on the sand hills. July, August.

S. conchana, Hub.—Wallasey sand hills, scarce; Hale Marsh, in profusion. July.

S. lacunana, W. V.—Everywhere.

S. urticana, Hub.—In old lanes, common.

S. ——— N. S. ?—Bred from *Myrica gale.*

S. decrepitana, Fr. R.—Two specimens taken at Hoylake are all I know of.

Genus Mixodia, Guen.

M. schulziana, Fab.—Plentiful on the wet parts of the mosses at Simonswood; a few at Hale. July, August.

Genus Roxana, St.

R. arcuana, Lin.—Hooton, freely.

Genus Orthotænia, Steph.

O. antiquana.—Taken in old pastures, and upon the Fender banks, Bidston Marsh. Not abundant. July, August.

O. trifoliana, Zell.—Sometimes abundant flying over Clover and Lucerne fields. I think its eggs are imported with the seed. July.

O. striana, W.V.—Plentiful at Gill brook, and on the Fender banks, Bidston marsh. June.

Genus Eriopsela, Guen.

E. fractifasciana, Haw.—Ditton marsh, and Halewood road, near the finger post. July.

Genus Cnephasia, Curt.

C. lepidana, Curt. —Plentiful amongst the young firs on the mosses. April, July, and August.

C. musculana.—Plentiful anywhere.

Genus Sciaphila, Tr.

S. subjectana, Guen.—Everywhere.

S vergaureana, Tr.—Plentiful about elms. July.

S. alternana, W. V.—I once took a few of this insect in Prenton lane. July.

S. octomaculana, Haw.—A few at Stourton.

S. hybridana, Hub.—Thorn bushes at New Brighton and Wallasey.

Genus Sphaleroptera, Guen.

S. ictericana, Haw.—In profusion everywhere.

Genus Capua, Steph.

C. ochraceana, Steph.—Boorswood, Hale. May.

Genus Clepsis, Guen.

C. rusticana, Tr.—On the fallows around Simonswood moss. May, June.

Genus Bactra, Steph.

B. lanceolana, Hub.—Common where rushes grow. June to August.

B. furfurana, Haw.—Around the parish sand pits behind New Brighton, and also in some old pits on the West Derby road, near Tue Brook. July.

Genus Phoxopteryx, Tr.

P. siculana, Hb.—Bred from *Myrica gale,* collected on Simonswood moss. May.

P. unguicana, Lin.—Bidston Hill, June.

P. uncana, Hb.—Bidston hill and Prenton hill. End of May.

P. comptana, Fr.—Plentiful at Flaybrick hill, and with *uncana.*

P. biarcuana, Steph.—Amongst the sallows at Crosby, freely. May.

P. myrtillana, Tr.—A few may still be found at Flaybrick hill. End of May.

P. lundana, Fab.—Abundant everywhere.

P. diminutana.—Three or four taken above Bebington, are all I have seen here. May.

P. mitterbacheriana, W. V.—Everywhere. June, July.

Genus Grapholita, Tr.

G. paykulliana, Fab.—Plentiful in Bidston plantation, amongst the birches. September.

G nisella, Lin.—May be beat from the sallows about Hooton and Spittal, in August and September. Feeds in the catkins.

G. nigromaculana, Haw.—Abundant where rag weed grows. August.

G. compolitana.—Generally distributed.

G. trimaculana, Don.—Plentiful on the Cheshire side.

G. penkleriana, W. V.—A few may be taken in oak woods, and I have taken a few on Flaybrick hill. May.

G. nævana, Hub.—Abundant where holly grows. Rake lane, Edge lane, West Derby, &c. July. Very variable.

Genus Phlæodes, Guen.

P frutetana, Hub.—Abundant amongst alders, beyond Croxteth.

P. immundana, Fv.R.—Rather difficult to find around here; Daysbrook and Walton. July.

P. geminana, St. N. S.—Plentiful on the wet parts of the mosses. July, August.

Genus Hypermecia, Guen.

H. augustana, Hub.—In profusion on the Crosby sand hills, feeds on the long leaved willow which grows there. June.

Genus Batodes, Guen.

B. augustiorana, Haw.—Local, about old gardens in which large pear trees are growing.

Genus Pædisca, Tr.

P. bilunana, Haw.—Croxteth and Prenton. June, July.

P. corticana, W. V.—Abundant on old oaks. August, September.

P. opthalmicana, Hub.—Old lanes around Tranmere and Rock Ferry. Plentiful. August.

P. occultana, Doug.—Plantation in Dacre park and Prenton, where spruce firs grow. Plentiful. July.

P. solandriana, Lin.—Abundant where birches grow. August.

P. sordidana.—Abundant where sallows are growing in damp places on the sand hills. July, August.

Genus Ephippiphora, Dup.

E. dissimilana, Fr.R.—Plentiful on young birches beyond Hooton, and at Simonswood.

E. scutulana.—Plentiful where thistles grow. May.

E. brunnichiana, W. V.—Common on coltsfoot.

E. trigeminana, Steph.—Abundant on clay banks around Birkenhead, &c.

E. ephippana, Hb.—Abundant at Crosby on the sallows.

Genus Olinda, Guen.

O. ulmana, Hb.—Upton and Parkgate, old hedges. July.

Genus Semasia, Guen.

S. janthinana.—Not scarce at Wallasey. July.

Genus Coccyx, Tr.

C. splendidulana, Guen.—Very few taken in the district. The pine covered hills from Bidston to Stourton have produced me about six specimens.

C argyrana, Hub.—Oak woods abundant. April.

C. hercyniana, Bect.—Plentiful where silver firs grow, Croxteth park, &c. May.

C. vacciniana, Tisch.—Formerly not scarce at Flaybrick hill.

Genus Retinia, Guen.

R. buoliana, W. V.—Small firs at Jackson wood and Bidston. July.

R. pinicolana, Doub.—More plentiful than *buoliana* in the same locality, and at Prenton.

R. pinivorana, Zell.—In company with the two last species, but generally wasted when they are fine.

Genus Stigmanota, Guen.

S. coniferana, Rat.—Fir woods in Cheshire, especially where they have been burnt.

S. perlepidana Haw.—Rough plantation near Hooton. April, May.

S. composana, Fab.—Eastham wood. May.

S. floricolana.—Hargrave Hall, on the large sycamore tree at the end of the house. Freely. July.

S. germerana, Hub.?—Around Tranmere, in old lanes amongst sloe bushes.

Genus Dicroramfha, Guen.

D. politana, W. V.—On grassy banks near Rock Ferry. June.

D. petiverana, Lin.—On grassy banks near New Brighton, when the sun is out. Plentiful. July.

D. plumbagana, Tr. —Borders of swampy places on Bidston marsh, evening. June, July.

D. caliginosana, Tr.—Ditch past the gate in Croxteth park, a little beyond R. Wright's farm. July.

D artemesiana, Bent.—Abundant where tansey grows. June and July.

Genus PYRODES, Guen.

P, rheediana, Lin.—Edge lane, Oxon, and Upton. April morning. Is a sun flier.

Genus CATOPTRIA, Guen.

C. ulicitana, Haw.—Wherever gorse grows.

C. hypericana, Hub.—Waste lands near Flaybrick hill, and wherever Hypercum grows.

C. hohenwarthiana, W. V.—Plentiful near old ponds in pastures. May, June.

Genus CHOREATES, Tr.

C. scintillulana, Hub.—Quarry at Wallasey, near Poulton Bridge.

Genus SIMÆTHIS, Leach.

S. fabriciana, Lin.—Where nettles grow.

Genus EUPŒCELIA, Steph.

E. atricapitana, Steph.—Freely around the sand hills. May, July, August.

E. maculosana, Haw.—On the blue hyacinth flowers in Eastham wood. May.

E. angustana, Hub.—Where gorse grows. Summer.

E. affinitana, Doug.—On marshy places all around the district. June.

E. humidana, Fv. R.—Bidston and Ditton marshes. July.

E. roseana, Haw.—Bred from teazle heads which grow upon Bidston marsh.

E. ruficiliana, Haw.—Stourton quarry, Wallasey Pool.

Genus XANTHOSETIA, Steph.

X. zoegana, Lin.—Plentiful on pasture land. July. Dusk.

X. hamana.—Always with *zoegana*.

Genus CHROSIS, Guen.

C. tesserana, W. V.—Woolton and Garston old pastures.

Genus ARGYROLEPIA, Step.

A. baumaniana, W. V.—Bidston plantation. August.

A. badiana, Hub.—Same place. July.

A. cnicana, Doub.—Bidston marsh. July.

Genus Cochylis, Tr.

C. smeathmanniana, Fab.—Very rarely seen. Old wet grass lands. July.

C. stramineana, Haw.—Abundant in grass lands. June, July.

Genus Aphelia, Curt.

A. pratana.—Abundant everywhere. July, August.

Genus Tortricodes, Guen.

T. hyemana, Hub.—Swarms in oak woods. April.

End of Tortrices.

THE PEOPLE OF THE ENGLISH LAKE COUNTRY, THEIR ORIGIN, HISTORY, AND CHARACTER.

By A. Craig Gibson, Esq.

(Read 7th May, 1857.)

Of that romantic tract of country now so well known as the lake district, the earliest inhabitants of whom any distinct traces remain, whether in history, tradition, archæology, or local nomenclature, were a Celtic tribe, who, it is supposed, effected a settlement in this part of England about four centuries before the Christian era. To these earliest colonists, called by some authorities, Hiberno Celts, is attributed the erection of the most important of those monuments of British Antiquity in which the district abounds. They have also left numerous proofs of their occupation of the country in the names of parishes, villages, mountains, lakes, and rivers.

A century or two later—the exact date being uncertain—another tribe, thought to be Cambro-Celts, also appear to have established themselves in the lake country; and of them, likewise, very distinct traces still exist in the nomenclature of the district. These were probably joined from time to time by other colonists of the same race, and this region was possessed most likely by all these conjointly up to the period of the Roman occupation, which was effected about the middle of the second century. One of the most acute and best informed of those writers who have lately turned their attention to the ethnology of Cumberland and Westmorland, as indicated in the local etymology—I mean Mr. Sullivan, of Kendal—discovers, in the signification of certain names of places, proof that the Romans were not allowed to take unopposed possession even of this remote and comparatively poor portion of Britain; and their many strongholds, including encampments so extensive that Camden calls the remains of that at Ambleside "the carcass, as it were, of an ancient city," with the numerous smaller forts connecting those, and forming chains of communication in all directions throughout the district, shew that they had to hold

their ground chiefly by the strong hand. It is only in history and in archæology that proofs of the Roman occupation of this district are found. The habit of that people of adopting the native names of places, merely softening them a little to suit their own more fastidious ears, accounts for the fact that, with the exception of one or two "casters," there are few names to which even a partially latin etymology can be assigned.

After the evacuation of the country by the Romans, whether that were voluntary or compulsory, it is probable that the inhabitants of the lake country suffered severely from the inroads of the Picts and Scots. That they were ever entirely subjugated or supplanted by those less civilized races is not probable. But, after the coming of the Saxons to within a little more than a century of the Norman conquest, it would seem that the Britons of the lakes were alternately subject to, and independent of, that people, and occasionally occupied the same territory with them on terms of comparative amity, as may be inferred from many names of places being compounded of British and Saxon words. Their subjugation by the Saxons is certain; for in the seventh century, as is well known, the Saxon king of Northumbria made over to St. Cuthbert, Carlisle and the country fifteen miles round it, which territory approaches pretty nearly to the northern confines of the lakes, while at the southern extremity of the district he gave him Cartmel, a tract of country at the foot of Windermere, and all the Britons upon it. We know also, that at the same period a Saxon priest, St. Herbert, lived unmolested in his hermitage upon the island in Derwentwater, which still bears his name. The story of the friendship of this recluse with St. Cuthbert, of their annual meetings, and coincident death, forms a very beautiful chapter in our ancient chronicles. In later times, forty days' indulgence was granted to all who attended the annual celebration of mass on St. Herbert's isle, instituted in commemoration of these two saints.

That the Britons of the lakes threw off the Saxon yoke is proved by the fact, that in the tenth century Cumbria, including Strathclyde and Galloway, was ruled by a British prince, Dunmail, who, in 945, was defeated in a decisive battle by the Saxon Edmund, aided, strangely enough, by Leoline, king of South Wales. Some historians, and all traditions, say that the last British king of Cumberland was slain, with most of his army, and buried where he fell. The vast cairn heaped over him, through which

the high road passes from Ambleside to Keswick, and over which is built the boundary wall between the two counties, still bears the name of "Dunmail raise." Others say he escaped, and died many years afterwards in Rome. The locality of this battle is nearly central to the district, and whatever may have been the fate of their king, this fact, and the accounts of Edmund's cruelty to the sons of Dunmail, would lead us to infer that the inhabitants of the district were not spared; and I am inclined to agree with those who hold that the remnant of these Britons, after this crowning disaster, sought an asylum amongst their brethren in North Wales. The country was given to the king of Scotland, and it does not seem probable that the conquerors settled amongst the hills to any important extent; for we read that fifty years later it was again cruelly devastated by the Saxons, and represented by them to be, at that time, the principal rendezvous of the Danes; who, probably invited by the abandoned state of the district—its low shores, and numerous creeks and estuaries, offering great facilities for landing—were now beginning to take possession, first of the levels and slopes lying between the mountains and the sea, and then gradually of the dales opening to the west. The balance of proof is heavily in favour of the supposition that these Danes, or rather Norwegians, are the principal stock from which the present inhabitants of the mountain district are descended. We find, indeed, in the Domesday survey, which came as near to the lakes as Low Furness, that many of the land owners there, prior to the conquest, had Saxon names, and amongst them was the Earl Tosti, brother of king Harold. But Furness, though now reckoned part of the lake country, was never included in the ancient kingdom of Cumbria, and would not be subjected to the devastations inflicted on the more northern territory. Its inhabitants were probably able to hold their own against the incursions of the "marauding Danes"; whilst, if any of the original British possessors of the soil farther north remained, it is more than likely they were so weakened and dispirited, that the Norsemen found little difficulty in displacing or exterminating the miserable few that might still cling to their ancient homes. That these two races, supposing any Britons did remain, ever amalgamated in any considerable degree, I hold to be extremely unlikely. Besides the scarcity of British words in the dialect, and the positive absence of any Celtic elements in the physical constitution, the habits, manners, and dispositions of the dales people, it is well known that hatred of the Sassenach, in which term they include all strangers, has ever

been, and still is, a ruling sentiment with all the Celtic tribes in these islands; and I can answer for this feeling being cordially reciprocated by the English mountaineers. There is more to be said, too, than my limits will allow, against the supposition that there is much Saxon blood in their veins. I shall merely glance at the circumstances that there are few words peculiar to the dialect of the district that may not be traced, without difficulty, to Scandinavian roots; that many of these words are still used in Denmark, Norway, and more especially in Iceland, which was colonized by the same people, and about the same period; and that in Chaucer, whose works contain more ancient Saxon words and phrases than those of any other well known writer, we meet with very few words now used in Cumberland, and the few we do find are those common to the dialect of that province and lowland Scotch, in which the Saxon element is more evident. Finally, if the great Norman barons, amongst whom William apportioned most of the lands in Cumberland, Westmorland, and Furness, located any of their followers amongst the population they found in possession, it does not appear that they were in such numbers as to affect their character or their language.

After the annexation of Cumberland by William, and his bestowal of seignorial rights over it upon his great leaders, it would seem that the bulk of the people there, as in other parts, were in a state of villeinage or serfdom, and were bought, sold, and given away as part of the estates on which they resided. In the charter by Stephen, Earl of Mortagne, afterwards king, granting certain lands and privileges to the Abbey of Furness, which he founded in 1127, we find that he makes over to the monks—"Dalton and all his lordship of Furness, with the *men* and everything thereto belonging, that is in woods and plains, in land and water; and Ulverstone and Roger Braithwaite with his possessions," and so on.

For about four hundred years from the middle of the twelfth century, the ecclesiastical must have been the predominating influence in this hill country. The district was, indeed, environed by almost a cordon of wealthy and religious houses. Besides Furness Abbey it had on the south the priories of Conishead and Cartmel. On the eastern confines was the abbey of Shap. On the north-east, but more distant, stood the fair priory of Lanercost, and that of St. Mary of Carlisle. To the north was the famous abbey of Holme Cultram; and the west had the priory of St.

Bees, the beautiful abbey of Calder, and the nunnery of Seton. Of these, Furness Abbey was the most powerful, and the most intimately connected with the district under consideration. Besides holding extensive possessions in other parts of it, the abbot for the time being held sway as lord paramount over the whole liberty of Furness, comprising some of the richest and most picturesque portions of the lake country; and though Furness contained five families of knightly rank, besides a numerous squirearchy, all these paid homage and fealty to the abbot, who also had supreme control over the military establishment of the district, each of the mesne lords and free homagers raising his proportion of armed men at his summons.

There can be no doubt but the rule of the monks was vastly beneficial to the lake country, in developing its natural resources—in directing and encouraging the industry of the people—improving agriculture, and bringing wastes into cultivation—carrying out mining and smelting operations—and lastly, for which their memory ought ever to be held in reverence, setting the example of enfranchising the serfs, elevating from a state of slavery to that of free tenantry, not only their own vassals, but those of their lay neighbours. There is an ancient document extant by which a lay lord assigns one of his "natives," with all his retinue and chattels, to the abbot and monks of Calder—"so," as it runs, "that from this time they may be free and exempt from all state servitude and reproach of villeinage from me and my heirs." The great poet of the lakes, in his verses on St Bees, thus refers to these beneficent priests:

> "Who with the ploughshare clove the barren moors,
> And to green meadows changed the swampy shores;
> Thinned the rank woods; and for the cheerful grange
> Made room, where wolf and boar were used to range?
> Who taught, and shewed by deed, that gentler chains
> Should bind the vassal to his lord's domains?
> The thoughtful monks—intent their lord to please,
> For Christ's dear sake, by human sympathies."

The spiritual wants of the inhabitants of the more remote parts of their jurisdiction were attended to by members of those communities stationed amongst them, or, where the population was more scanty, by occasional visitation. An old building is still in existence at Hawkshead where one or two priests from Furness resided, and where the Abbot's bailiff collected

the abbey dues, and administered justice in the name of his lord. There is also a tradition that a monk from Furness resided at a place called Bank Ground, on the eastern shore of Conistone Lake; and other localities have similar traditions. Of the visits of the priests to the wilder parts, I once discovered an interesting relic. At a farm house in the "unfinished" vale of Seathwaite, I noticed that the cats fed from a vessel of uncommon form and material. On examination this proved to be a small square font or piscina, which in the old time, no doubt, held holy water when the priest came up the dale to administer the rites of his church to the few inhabitants of that still thinly peopled locality. It was made of white sandstone, of which there is none in Seathwaite, had a cross well sculptured in relief on one of its four sides, and had been found, not long before, in a little stream close to the house.

After the Reformation we have few data on which to base any distinct notion of the ecclesiastical state of the dales' people, but we know that two of the earliest protestant archbishops sprung from this district—Edwin Sandys, of York, from an ancient family located at Hawkshead, and Edmund Grindal, of Canterbury, from a yeoman stock at Hensingham, and that each founded and endowed a grammar school in his native parish. As they were thus solicitous about the educational interests of their native district, we may hope that these distinguished prelates did not overlook its religious requirements. Nearer to our own times the clergy of the dales were not in such a position as the friends of the church would desire. Most livings were miserably small, many without residences, the incumbent living at Whittlegate, that is, exercising the privilege of using his knife at the different tables in his chapelry, in some rotation arranged according to the value of the holdings; and, besides being obliged to act as parish schoolmasters, the clergy had in many cases to resort to labour the most derogatory to eke out a livelihood. The undignified position in which they felt themselves, the dull monotony of their week day lives, and perhaps the constant temptation presented by the little public house always seen in the dales, illustrating the old rhyme, too often led to habits much more degrading to the cloth than any secular labour. It is, however, consolatory to know that the present clergy there, as they are better supported are likewise, in all respects, better fitted for their duties than most of their predecessors. This rude outline of the religious history of the dales' people would not be complete without noticing that there are a few Baptist

chapels, some as old as the time of the Commonwealth, scattered over the district, as well as several Quaker meeting houses, dating from the era of George Fox, who married a wife, and made many converts there. It is well known that the early quakers did not exhibit the unobtrusive and placid deportment that signalizes their descendants. And it is probable that their energetic preaching and bold defiance of order, more especially their frequent bearding of the little respected law, and often of clergy, during service in the churches, captivated the fancy of a people from whom a fearless assertion of principle has always won respect.

The feudal condition of the dales' people after the suppression of the monasteries was probably the same as for ages before, though some of their rights were disputed, and it is also probable that the church vassals would find their new superiors hardly so considerate and indulgent as the benevolent monks. The bulk of the population consisted of small copy-holders and customary tenants, who occupied tenements of various extent, paying certain dues to the lords of the manors, and affording them a fixed amount of armed support in time of war. For many ages the habits of this people were especially warlike. And of this, a curious evidence is preserved in the well known boast of Sir Lancelot Threlkeld, a stout Cumbrian knight, who married the widow of the Lord Clifford that murdered the young Earl of Rutland, and was himself slain at or before the battle of Towton. Sir Lancelot's boast was, that "he had three noble houses; one for pleasure, Crosby in Westmorland, where he had a park full of deer; one for profit and warmth, namely, Yanwath, nigh Penrith; and the third, Threlkeld, on the edge of the vale of Keswick, well stocked with tenants to go with him to the wars." Their restless neighbours, the Scots, kept them constantly on the 'qui vive' to repel inroads, and to make reprisals; and we find also, by many records, that they had ever and anon to muster and march under their respective leaders, not only to the wars against the Scots, but to take part in all the great civil commotions that have convulsed this country. During the wars of the Roses nearly all the gentry of the lakes plunged with their tenantry into the conflict, mostly declaring for the house of Lancaster, though Richard of Glo'ster made many friends on the eastern side of the country during his residence in the castle of Penrith. The tomb of another Cumbrian knight of that period,

in the little church of Muncaster, bears the following suggestive inscription (in old English):

Of your charitie preye for the sowl of
Sir John de Penyngton sonne of Sir Alan de Penyngton who
hadde to wyffe Elizabeth dowter of Sir Nichols de Radcliffe
de derwentwater a woman of noble blude yis Sir John
ressebed holie Kynge Harrye whyche was Henry ye Sixth at
Molcaster 1461 Kynge Harrye gave Sir John a braube workyd
glasse cuppe with his Rod before yat whylles the
famylie shod keep hit unbrecken thei sholde gretely thrif
whyche cuppe is kalled the luck of Molcastre
He was a grete captain and heded the left winge of the armie
agayne the Scotties whylles Erle of Northumberland heded
the mayne bodie

The attempt of Lambert Simnel upon the crown was fatal to one old Furness family, said to be of Saxon descent. Sir Thomas Broughton, of Broughton, with his array, joined Martin Swart and his Flemings when they landed in Furness, with the Irish Geraldines, to support the claims of that impostor, and was slain at the battle of Stokefield, or, as some pretend, escaped and lived for many years in concealment amongst his tenants in Witherslack. However the fact might be, the name was extinguished, and the estate given by Henry VII. to his stepfather, the Earl of Derby.

In the disastrous rebellion of the northern lords in Elizabeth's time, the lake gentry bore a part; and I have been told—I cannot say on what authority—that the first rendezvous of the leaders in that rising was at Hawkshead. In the great civil war of the seventeenth century, nearly all the gentry of the district declared for the king, and suffered severely for their loyalty. The Philipsons of Windermere were so impoverished that they never recovered their former position, and have since disappeared. The Kirkbies of Kirkby, also, never entirely rallied from their losses in the royal cause. The same may be said of the Huddlestones of Millom, a family who boasted a pedigree reaching five generations beyond the conquest. Nine brothers of this house held commands in Charles' army; and the eldest, Sir William, raised for the king's service a regiment of horse and one of foot, the latter of which he maintained at his own cost during

the whole war; and for his bravery at Edge Hill, where he retook the royal standard, was made a knight banneret on the field. The young Earl of Derwentwater's fatal share in the affair of 1715 is well known, but there is no record of his Cumbrian tenantry being with their lord at the unfortunate occupation of Preston. In 1745, though it is believed that several of the Cumbrian gentry were pledged to join Charles Edward, fortunately for them they were arrested, and held in durance till all was over, and so prevented imperilling their lives and estates without wilfully violating their pledges. Though the military spirit of the people has lain almost dormant for two centuries, events have occurred in the meantime to shew that the old readiness to act has not been dead in them.

Of the people of this district in our own times, it may be said in the first place, that in their physical attributes they are probably the finest race in Her Majesty's dominions. Their Scandinavian descent, their constant exposure to a highly oxygenized atmosphere, their hereditary passion for athletic sports and exercises, their happy temperament, their exemption from privation—real poverty being very rare amongst them—and many other causes have contributed to develope and maintain this physical pre-eminence, and to enable them to enjoy as pastime an amount of exposure and fatigue that few but themselves would willingly encounter. Thomas de Quincey, who lived thirty years amongst them, observed them closely, and knew them well, after remarking that "it is the lower classes that in every nation form the fundus in which lies the national face, as well as the national character," says—"Each exists *here* in racy purity and integrity, not disturbed in the one by alien intermarriages, nor in the other by novelties of opinion, or other casual effects derived from education and reading." Again writing of the gatherings at the auctions amongst the hills, still favorite holiday occasions with the people, the same author says, "There you saw old men whose heads would have been studies for Guido; there you saw the most colossal and stately figures amongst the young men that England has to shew; there the most beautiful young women. There it was that sometimes I saw a lovelier face than ever I shall see again." The eloquent Opium Eater gave the strongest possible proof that his admiration was real, by taking one of these "beautiful young women" to wife. I may mention in connexion with this part of my subject, that the different regiments of lifeguards, which require the tallest and best formed men the nation can furnish, are largely recruited from the lake counties, as also is

the Liverpool police, a circumstance which no doubt goes far towards making that body, what it certainly is, the finest civil force in the kingdom.

The dales people are also remarkable for longevity. I have seen in a cottage the living representatives of the extremes of five generations, and in another adjoining, a family of children who had fourteen living ancestors,—their parents, their grand-parents, and all their eight great-grand-parents being still alive. Statistics show that in some of the parishes the proportion of those who survive the age of fourscore is as one in six; the general average of the kingdom giving only one in thirty-two. These are remarkable proofs of the salubrity of the district.

The morals of the Fell folk are those of most rural communities—not inferior certainly to those of their more pretentious neighbours over the border. Miss Martineau is the only writer who speaks out on this subject, as, indeed, whether right or wrong, she does upon most others, and I gladly lay the responsibility of censure upon one so able, and so willing, to bear it. This lady says,—"Scarcely anything can be conceived more lifeless, unvaried, and unideal, than the existence of the dales people and their families; and where the intellect is left so idle and unimproved as among them, the sensual vices are sure to prevail. These vices rage in the villages and small towns, and probably no clergyman or justice of the peace will be ever heard speaking of the rural innocence of the region,—which is, indeed, only to be found in works of the imagination. The people have their virtues, many and great," and so on.

In their social and domestic relations, there is much that is admirable. The hearty and genial tone of their ordinary intercourse is scarcely less pleasing than their active sympathy with, and generous readiness to assist, those neighbours who are visited by misfortune, of which instances innumerable have passed under my own observation. Open-hearted charity and hospitality still form a large portion of the character of the dales people though the great increase of tramps, and of tourists, in their country, rendering its general bestowal impossible, makes its existence less obvious than formerly.

Except on some very exciting occasions, they rarely allow their feelings to carry them beyond the placid demeanour of their every-day life. Their

matter of fact nature makes them regard with indifference, if not with contempt and dislike, any highflown expression of sentiment. They are not distinguished by the romantic or poetic temperament that characterizes the natives of other mountain districts, and certainly possess none of that exaggerated attachment to their country that is said to affect Swiss mercenaries and Highland soldiers so inconveniently on foreign service.

Of powerful attachment to home itself I have seen many instances in the lake country. I have known the sons of a ruined 'statesman, one after another, enter upon, as farmers, the land their fathers had held as proprietors, and that without hope of making it profitable. Respecting this feeling amongst the yeomanry of the lakes, Wordsworth says,—"Their little tract of land serves as a kind of permanent rallying point for their domestic feelings, as tablets upon which they are written, which makes them objects of memory in a thousand instances in which they would be otherwise forgotten."

In another particular they are unlike other mountaineers. Though singing, next to dancing, is the chief amusement at their frequent merry-nights, and the only one, besides drinking ale and smoking, at the sheep-shearings, they have no music native to the district. As to poetry, besides the poems and ballads written in their own dialect, and descriptive of their own life and manners, the works of Burns are all they hold in much esteem. Burns alone, of all poets, seems to reach their feelings and understandings. Wordsworth, who professed to draw his inspiration from humble life and common incident, they hardly recognise as a poet. Hearing him spoken of in Langdale, not far from his residence, by two intelligent old 'statesmen, as "the master of the stamp office," I enquired if they had ever heard of him as a poet? "O yes, they had heard he was a first-rate hand at THAT." Had they ever read any of his poetry? "They could not say they had."

The dalesmen don't pay much respect to any one who addresses them in language they are not accustomed to, nor do they make much allowance for ignorance of their own dialect. In a Cumberland village I once stopped to speak to an old lady at her door, and I began by remarking that the river was much swollen. "We call it a *beck*," said the old lady, turning her back upon me, and telling her grand-daughter to bring out the scrapple. "What may a scrapple be?" I asked, rather deferentially. "Why

that's what a scrapple may be," said she, indicating a coal rake in the girl's hand; and as I moved away thinking that "scrapple" was a tolerably expressive name for the implement in question, I overheard her say to a neighbour, "I don't know where he has been brought up—he calls t' beck a river, and does not know what a scrapple is!" They have a very quick sense of humour, and sometimes practice a little mystification on inquisitive strangers whose questions they consider uncalled for, by cramming into their answers as many obsolete provincialisms as their dialect can supply. Of this the most outrè of all the specimens I remember is the reply of a boatman on Ullswater to a tourist who made the somewhat stupid enquiry, "Does it ever rain here?" "Why it donks and dozzles, and sometimes gives a bit of a snifter, but it never comes in any girt pell," leaving the querist's stock of information very much as he found it. Their power of sarcasm is considerable, and so is their readiness in repartee; and of these I could adduce many examples did time and space permit.

Some of their superstitions are respectable. Besides the ordinary complement of mere vulgar apparitions, such as boggles, dobbies, headless women, and murdered pedlars, *et hoc genus omne*, there is the Castle rock of St. John, which on a certain night in each year becomes what it was "in good king Arthur's time,"—a real castle, with gates, drawbridge, banners, and warders complete; there is the boat full of spectral passengers, occasionally seen crossing Thirlmere at midnight from the foot of Helvellyn to the old mansion of Armboth, which is supernaturally lighted up for their reception and entertainment; there is, besides the luck of Muncaster, already alluded to, the more famous luck of Eden Hall, a similar cup with a similar prestige, but with a different story, having been reft from a fairy revel by a pot-valiant butler; there is the old gate at Grasmere, where, with sufficient faith, you may obtain whatever you wish for; there are the two skulls in the old hall of Calgarth, which always come grinning back in the morning, however they may have been disposed of over night; and many more, which we cannot stay to indicate.

Before concluding, I should wish to combat a reproach implied in the quotation I have given from Miss Martineau, in which that lady hints that the intellect of the dales people is left idle and unimproved. To say that a people occupied as they are, mainly in pastoral and agricultural pursuits, is an educated or studious people, were absurd; but I have

known many instances amongst them where a love of letters was cherished in most unfavorable positions, and also many, where a fair amount of general learning, and even of scientific knowledge, has been acquired under circumstances the most adverse to such acquirements. The case of Jonathan Otley stands prominently out as one of these instances,—the venerable mountain guide and geologist, who, born of poor parents, in the Vale of Loughrigg, and bred a basket maker, died, a nonagenarian, last winter, at Keswick,—and of whom, in an address to the young men of that little town, it was then well said, "Recently there was breathing and moving among them one whose regularity and temperance enabled him to carry, with a very slight stoop, the weight of 90 years. Years before most of them came into existence he settled among those scenes which he loved so long and so tenderly, as a humble but intelligent artizan; for he loved reading and was attached to study and thought. In those remote days there were no mechanics' institutes, no cheap lending libraries, but there was a strong will in this man to procure learning, and a strong will—as it ever must—provided a ready way. He read, not simply books, but nature; and he read his lesson well. He knew the depth of every lake and the height of every hill, for he himself had fathomed the one and scaled the other. Not a flower blossomed in our valleys, nor a fern waved on our mountain sides, but he knew its nature and properties, and had marked its beauty. He could tell of what materials the everlasting hills were bullt, and the interior structure of the mighty Skiddaw was as familiar to him as its outward form was to them."

But besides numerous minor lights of brave old Jonathan Otley's order, the lake country has produced some of the most eminent self-made men that the world has known. The poet, William Wordsworth, though a native of the district, may *not* be claimed as a self-educated man; but the painter, George Romney, the successful rival of Sir Joshua Reynolds, and said by Flaxman to be "the first of our painters in poetic dignity of conception," was the son of a Furness carpenter, and in early life worked for several years at his father's trade; the traveller, historian, and geographer, Sir John Barrow, was born in a very humble cottage near Ulverstone; and the philosopher, John Dalton, was the son of a poor weaver in a Cumberland village, and from the age of twelve had to support himself by teaching. Even this short list, which might easily be extended, should

suffice to refute any imputation of a low order of intelligence or indisposition to mental culture thrown upon the sparse population of this region. The writer of this imperfect essay was among them many years, occupied in the discharge of duties affording unequalled opportunities for studying the peculiarities of their mental, as well as their physical organization, and he believes that more favorable circumstances only are required to make them as remarkable for the development of their intellectual as already they are for that of their physical nature.

ON THE POPULATION OF LANCASHIRE AND CHESHIRE, AND ITS LOCAL DISTRIBUTION DURING THE FIFTY YEARS, 1801–51.

By J. T. Danson, V.P., and T. A. Welton, Esqs.

(Read 23rd April, 1857.)

Part First.

The communication of which this paper is a first instalment, originated in an effort to follow out one of the suggestions contained in a letter addressed to the Society by one of its members, in March, 1855, entitled, "Science in Lancashire and Cheshire," and the greater part of which was reprinted in the seventh volume of our Transactions.

It was determined to take the six enumerations of the people made by the Government in the years 1801–11–21–31–41–51, and extracting all that related to the two counties of Lancashire and Cheshire,—as the locality occupied by this Society,—to endeavour to elicit from the materials thus obtained, a connected account of the actual progress and distribution of the population over every part of our district during the fifty years thus brought to view.

The labor involved in this attempt was soon found to be very considerable. Its projector, however, fortunately found congenial and efficient aid. All the computations on which the paper is based have for some time been made, and are comprised in a mass of tabular matter, the whole of which is completed, and the greater part of which will be presented to the Society for publication. It only remains that the matter thus accumulated be divided into such portions (probably three) as may each be properly laid before the Society on a single evening, and accompanied by such commentary as may seem requisite to develop its more interesting and important features.

The usual and most simple purpose of a census, or numbering of the people, may be said to be two-fold :—

1. To ascertain the total number of persons living, at the date of the census, on a given area.

2. To ascertain how they are distributed over this area.

To effect the second of these purposes, a division of the area into parts, and a distinct enumeration of the persons inhabiting these parts, is necessary. And the value of the result will depend much upon the manner in which this division is made.

It is a familiar fact that the inhabitants of a country may be, and usually are, found spread over its surface in such a manner as to exhibit, in different localities, great varieties of density. And it is equally matter of common observation that the most important of these varieties, where it exists, is that which indicates the existence of towns. The rural and the urban life of our race have so long, and so invariably, exhibited incidents and effects of a widely different character, that in popular opinion they are rather contrasted than compared. But, though the difference has long been recognised, it has never yet been precisely defined. Nor is such a definition easily settled, or carried into effect. No division of the area of a country which should not mark *the precise boundaries of its towns* at the date of the census could be expected to exhibit, with any degree of accuracy, the separate numbers of its rural and urban population. And no such division has yet been attempted in this country.

Again, when we turn to the merely rural districts, we do not find the local divisions recognized in the census to be such as correspond with the different degrees of density of the population prevailing at the date of the first, or at that of any of the subsequent censuses now before us. Nor, indeed, do those divisions correspond, otherwise than vaguely, with any other of the remarkable phenomena which become visible on a careful examination of these voluminous records.

These defects of division, or rather these obstacles, alike to a ready comprehension and to a clear statement of the changes which have been taking place in the growth and local distribution of the people, are obviously traceable to the adoption, for the purposes of the census, of previously existing, and in most instances, very ancient local divisions.

These divisions had been made when the work of the census was not anticipated, and when, had it been anticipated, it could not have been provided for.

It is requisite, however, to bear in mind that even had new divisions been made at the date of the first census,— though these might have been such as materially to facilitate the use, for practical purposes, of that and all subsequent censuses,—yet as the subsequent growth of the population could not have been in any degree foreseen, the defect here referred to would still have been incidental, in some degree, to comparisons made between successive censuses, seeing that an altered distribution of the population is one of the most constant results of the mere lapse of time.

A single census can, of course, show only the numbers and the distribution of the people at the period at which it was taken. If a second be taken at a subsequent period, a comparison of the two will exhibit the changes made in the interval; and these changes will almost invariably be of two forms: of the total number, and of the local distribution. And every subsequent census, as it increases the number of records of these two particulars at successive periods, will suggest, and afford means of making, new comparisons, developing new changes in both respects.

The first general relation to be marked is that of the entire number of the people to the area on which they are living. The next is the same relation, in detail, of the population of particular localities to their area. Then particular localities divide themselves, as before observed, into town and country; and it becomes necessary to attach to the colloquial term "town" a definite or scientific meaning. This has not yet been done—a fact in itself sufficiently demonstrative of the small amount of attention and thought yet attracted to this subject. How it may best be done is not for us to say. It seems, indeed, that any correct and practically useful definition of a town must have reference simply to a given density of aggregation, occurring within an area of limited extent. In this view of the question the distinction of town from country must needs be, to some extent, an arbitrary one. The distinction, however, being established and applied, we are in a position to make a separate enumeration of the urban and the rural population, the latter, of course, including every variety of density below that fixed upon as constituting a town.

When a second census introduces the consideration of differences due

to the lapse of time, as distinguished from those incidental to various localities *at the same time*, we are confronted with further differences, as in the rate of change, whether by increase or decrease, in compared localities. One census presents us only with variety of contemporary density. Two will exhibit, also, differences marked by comparative increase or decrease in different localities absolutely, and also by variety of rate of increase, or of decrease with reference to the pre-existing population. A third census will develop still further differences, by comparison of the fact of increase or decrease, and its rate and amount, in the interval between the first and second, and between the second and third censuses; and the number and variety of these comparisons will similarly increase with each additional census.

It will be observed, that all the changes of detail here referred to, might take place among a population whose total number on the whole area should be stationary. On the other hand, a population, the whole mass of which should be continuously increasing, though it must needs show, at each successive census, a general increase of density, might yet show little or no change in the local distribution of the entire population, or little or no difference between the common rate of increase, and that incidental to particular localities.

In Lancashire and Cheshire, however, all the changes which can impart interest to an inquiry like the present, have undoubtedly been taking place. The population has been increasing, and that rapidly, during the whole of the period of fifty years here brought to view; and of this increase we have the records furnished by six censuses, taken at very nearly equidistant periods of ten years.

The two counties, fortunately for the separate treatment of them here attempted, now form one of the great primary divisions of England and Wales—the north-western district. Their total area is 1,874,230 acres. This area was peopled, at the date of the first census, in 1801, by 872,663 persons. In 1851 we find that the population upon the same area was 2,490,937; so that it was increased in fifty years by 185 per cent. Neither in 1801 nor in 1851 was the population distributed at all equally over the area occupied. Looking only at districts of considerable extent, there were many in 1801 which, on an average, had fewer than 100 persons to the square mile of 640 acres; and many more which had upwards of 500

to the square mile. And there were, in 1851, districts, but of smaller extent, which had in the preceding fifty years increased their population ten, twelve, and even thirteen-fold; while others, though these were few, not only had not increased at all, but had even a smaller population in 1851 than in 1801.*

We have said that at both the beginning and the end of the fifty years in view the people were distributed over the surface of the two counties with considerable irregularity. Popularly speaking, they lived partly in towns, and partly in the country. As already observed, the only distinction we can universally and consistently recognise, as marking the existence of a town, is the density of its population, as compared with that of the surrounding country. It is also obviously necessary to the purpose of the definition to confine it to aggregations of not less than a given number of persons, even though, in other instances, the required density be present.

The Registrar-General accepts, as a town, every aggregation of persons, so-called, and numbering not fewer than 2,000. But he disregards the element of density; and therefore gives no regard to the area on which this number shall be found congregated. The number—two thousand—as it appears to have been fixed upon after consultation with a large number of local authorities, and after careful consideration by those who were undoubtedly well acquainted with the results of several prior censuses, we take to be unobjectionable. But as we have now to deal with both town and country, and must divide their areas, we must also take the area of the towns into consideration. And for this purpose we have fixed upon 180 acres as the largest area, spread over which, 2,000 persons living together shall be deemed to form a town. This area has been fixed upon after repeated observation of the area actually occupied by such towns as are most common in Lancashire and Cheshire. It gives a total area of less than 200 square yards to each person; and about 1000 square yards to a family of average number. This, of course, is apart from any allowance for unoccupied spaces within the area of the town, or for the space occupied by roads, buildings, &c.

Now, taking these preliminary conditions, and applying them to the

* The average density of the population of England and Wales in 1801, was 153, and, in 1851, 307, per square mile.

census of Lancashire and Cheshire taken in 1851, we find that there were in that year within the two counties, so many as *fifty-three* towns;* and that these towns then contained about two-thirds of the whole population, or 1,610,000 out of 2,490,000. The Registrar-General, under a less careful division of the two classes of population, makes the town population of Lancashire and Cheshire only 63 per cent. of the whole.

If we go back to 1801, and count the towns under the same rule, we find that they were then only twenty-nine in number, containing a population of 364,000. And as the entire number of the inhabitants of the two counties was then 872,600, it follows not only that the town population, at the beginning of the half-century, was very much less, (in absolute number,) than at its end, but that it also bore a much less proportion to the whole. The two forms of population had both increased, but they had greatly changed their numerical relation to each other. While the whole population had been trebled, that portion of it dwelling in towns of 2,000 inhabitants had increased nearly in the proportion of three-and-a-half to sixteen, or more than fourfold.

It is next to be observed that the towns of 1851, and therefore the chief groups of the denser population, are so placed together on the map, as at once to suggest the division of the tract of country now before us into four parts or regions. These regions are unequal in size, but they are sufficiently distinguished by the manner in which the towns lie grouped together, and by other local peculiarities, amply to justify their being dealt with apart.

In one of the tabular statements appended to this paper will be found a list of the registration districts included in each of the four regions, with the acreage of each district, its population in 1801 and 1851, and the rate per cent at which its population had increased in the interval. The following are some of the more striking results of an examination of the figures here referred to :—

Taking each region by itself, and disregarding the difference between town and country, we find that the Northern region includes five registra-

* The town of Todmorden is not included, as will be observed in the list appended to this paper. The greater part of the town is in Lancashire, and the rest in Yorkshire; but the Registrar-General has placed it in the "Registration County" of York.

tion districts, the Eastern eighteen, the Western five, and the Southern seven, making a total of thirty-five.

Of the Northern region the area is 504,260 acres; and its population was increased between 1801 and 1851 by 55 per cent. Its chief town is Lancaster. It is by much the most thinly peopled.

The Eastern region is by much the most densely peopled of the four; and has been so all through the period in view. It includes the great "Manchester District," with which one of the authors of this paper has dealt in a previous communication to the Society. The density of its population has caused it to be divided into registration districts of smaller average area. Its total area—645,800 acres—does not very much exceed that of the Northern region. But its population was increased, in the same fifty years, by 203 per cent. Its chief towns are Manchester, Bolton, and Preston.

The Western district is comparatively small: only 231,900 acres. Part of it is very densely, and part but thinly peopled. It includes the populous districts on the banks of the Mersey; but it also comprises the extensive flats between the estuary of the Mersey and the Ribble. Its principal towns are Liverpool and St. Helens. Its population was increased in the fifty years by 307 per cent.

The Southern region has an area of 492,000 acres. It lies nearly all south of the Mersey, and so is nearly identical in area with the County of Chester. Its chief towns are Warrington, Congleton, and Chester. Its population was increased in the fifty years by 185 per cent.

Now, taking into our view the whole thirty-five registration districts making up the four regions, we observe that every one of them, from the borders of Westmoreland down to the southern confines of Cheshire, had a larger population in 1851 than in 1801. The increase, then, may be said to have been general. But in the comparative amount of increase there was a prodigious variety. And the further we descend into detail the greater do we find this variety—many parts of registration districts showing a decrease of their population, and some others exhibiting a transition, even within a few years, from the comparative stillness and solitude of a merely agricultural district to the crowded dwellings and busy hum of a densely peopled manufacturing town.

The smallest increase in any registration district was in Garstang—32

per cent. This is in the Northern region. But here the greatest increase in any one district was only 94 per cent. (in Fylde), and the general average, as I have said, is only 55 per cent.

The greatest increase in any registration district throughout the two counties was in Chorlton. Here it was 1226 per cent. This is in the Eastern (or Manchester) region--Chorlton being a small district of about 11,500 acres, lying between Manchester and the river Mersey, and whose population was increased, in the fifty years, from 9,300 to nearly 124,000, apparently without, in any instance, bringing together so many as 2,000 persons with a degree of density sufficient to constitute what we have agreed to term a town. The registration district in this Eastern region which showed the smallest increase in the fifty years was Chorley, a district of 52,000 acres in extent, and lying about midway, in a direct line, between Preston and Wigan.

In the Western (or Liverpool) region there was one registration district showing nearly as large a growth, in the fifty years as the largest above-mentioned. This was West Derby. Here, however, as with Chorlton, which had evidently received much of the overflowing population of Manchester, we find the cause in the immediate neighbourhood of a large and growing town, combined with those facilities of communication which at once enable and invite a large proportion of the active inhabitants of our great towns to spend their leisure and their sleeping hours away from the streets among which their daily labours are carried on. West Derby, at the beginning of the century a tract of country only partially suburban, had, in 1851, contributed a section of its area to the town of Liverpool, and nearly the whole of its surface to the suburbs.

The district of least growth in this Western region was Ormskirk, lying nearly in the centre of the level tract of country stretching from the mouth of the Mersey up to Preston. But even there it was 107 per cent. So that the district of least growth in the Western showed a larger increase than the one of greatest growth in the comparatively thinly peopled Northern region.

In the Southern region the greatest increase took place about Runcorn, and the least about Nantwich. Runcorn has had the advantage of lying at the head of the estuary of the Mersey, and at the starting point of the canal navigation which carries on the water-way thence towards Manchester,

and also up the valley of the Weaver. Runcorn is thus closely connected with the Eastern region, and might not improperly have been included in it. The town of Nantwich, and its neigbourhood, forms one of the remotest of the salt producing centres of the Weaver Valley.

In the same district, and only five or six miles east of the town of Nantwich, has sprung up, during the last fifteen years, the railway town of Crewe, which, in 1851, had a population of 4,500 persons. This addition to the population of the district, arising from the junction of the Chester and Crewe, the Manchester and Birmingham, and the North Staffordshire Railways with the Grand Junction line, at a spot before thinly inhabited, can scarcely be attributed to local influence. And deducting the new population of Crewe, the slow progress of this Nantwich district becomes the more apparent.

We have, perhaps, now arrived at a point at which we may, without risk of confusion, regard the growth of the entire population with reference to the simultaneous growth of that portion of it dwelling in towns. And it is here that the importance of this enquiry becomes most apparent. The growth of the town population of the world is highly significant. It has already gone further in England than anywhere else; and so far as it implies concentration of all the various forms of human power, goes far to explain the dominant influence of the English people in the affairs of nations. We are, however, now concerned with the phenomenon itself; its causes, its progress, and its immediate effects upon our own district, rather than with its place in history, or its influence upon the national power or policy.

The inducements to a town life seem to be in every case nearly identical with the inducements to combined action; and these all resolve themselves into a real or supposed economy of power—of power to produce, to distribute, or to consume—implying new or additional means of obtaining subsistence, of finding amusement, or of exercising power. In England, the town population now forms more than half of the whole. This is a proportion never before attained in any other country, and at least three times as great as exists in any like extent of country in the world. But it does not follow that the balance of town and country has, on the whole, been so much disturbed as at first sight might from this single fact be

inferred. Beef and corn cannot be raised in towns; nor can other articles, of equal necessity, or nearly so, be produced, with economy, in the country. Thus an equilibrium is maintained far too absolute to admit of any such disturbance as has apparently been effected in England. The facts being duly regarded, it will be observed that the country districts belonging to the towns of England—belonging in the sense of necessary mutual dependence—are not only in England, but are spread over a large portion of the habitable globe. They are connected with us by our foreign commerce. For instance, many millions of acres of land within the torrid zone are cultivated with as perfect a relation to, and reliance on, the people of Manchester, as the consumers of the resulting produce, as are the few thousands of acres immediately around that town, and which within sight of its chimneys, and in contention with their smoke, grow wheat and oats, hay, potatoes, and milk, for the same consumers. Our manufacturing towns, and our great ports, may already be said to belong to half the human race.* To serve purposes which, through the connecting links of commerce, have become at once ours, and those of hundreds of millions of persons, ruled by numerous governments, and speaking many languages, our people have, for the last fifty years, been concentrating their habitations, and forming towns. This process is going on more rapidly now than at any past time. Nearly all the national energy is devoted, directly or indirectly, to its promotion. And as far as can yet be foreseen, it is likely to go on during the next fifty years much more rapidly than in the past. Our present purpose is to mark its rate of progress, and something of its methods; and this with a view to knowing ultimately something more of its effects, and thence of its probable action on the destiny of the English people, and especially on that of our own district.

Already some of its more immediate effects are visible enough. The greater efficiency of labour attained by bringing large numbers of men to act continuously together, and in concert, has long been obvious; and it is now practically illustrated in our towns to an enormous extent, and in a great variety of ways. But it is hardly less obvious that this increase of

* "Commerce brings the parties engaged in it into connection and contact with almost the whole known world. Liverpool is not the Liverpool of Lancashire only, or of Cheshire only, or of England only—Liverpool is the Liverpool of India, of China, of Africa, of North and South America, of Australia—the Liverpool of the whole habitable globe."—*Speech of Mr. Hope Scott on the Mersey Conservancy Bill, 24th June*, 1857.

power is bought at a price—that privation of light and air, for instance, has induced new and fatal diseases. It is now some years since the Registrar-General announced that the average duration of life among the population of the towns of England was about seventeen years less than among the population of the country. And with shortened life has come a lowered physical condition. Comparatively few of the inhabitants of our large towns are now found to possess the physical requisites looked for in those who enlist into the army. Intellectually, the results are similar. It is impossible to doubt, much less to deny, the good effects of a town life in promoting the education of most of the faculties. But it is doubtful whether it promotes the healthy action of these faculties, or gives to them a better direction. Morally, there seems to be a similar counterpoise. The action of public opinion, and of an efficient police, being allowed for, we find life and property in our large towns is tolerably secure. There is undoubtedly much vice; but there is also much virtue. And excepting that the tendency of a town life, in its almost exclusive devotion to money getting, results in an increased and sometimes exclusive action of the merely selfish propensities, it may be doubted whether the popular notion of the comparative viciousness of a town population is not a mistake. Here, however, we are on ground proper to ulterior enquiries, and not within the scope of the present paper.

In the five districts of the *Northern* region there were, in 1801, a population, in round numbers, of 79,000; and in 1851, a population of 122,000 persons; shewing, as I have said, an average increase of fifty-five per cent. In this region there were in 1801 only three towns—Ulverstone, Lancaster, and Kirkham. Clitheroe was then a considerable village, and Blackpool a small one; but Fleetwood had no existence. All the six now rank as towns, under the rule before stated, and in 1851 had an aggregate population of 37,000.*

In 1801 the whole town population of this region was about 15,500, or

* It has been found impossible, in many instances, to ascertain the actual area and population of the towns of 1801. The table (see Appendix) in which these results are stated has, therefore, been so framed as to exhibit only the (known or estimated) areas of the towns of 1851, with the population (known or estimated) of the same areas in 1801. If minute accuracy were aimed at in the text, this method would be objectionable; but as round numbers only are used, and approximate proportions only are indicated, it is, when marked, of little consequence.

about two parts in eleven of the whole. In 1851 it formed about three parts in ten of the whole. While the entire population had increased by 55 per cent., the towns had increased 140 cent.

In the eighteen districts of the *Eastern* (or Manchester) region, in 1801, there was a population of 512,000, and in 1851 of 1,556,000, an increase of 203 per cent. Here there were, in 1851, no fewer than thirty towns, with an aggregate population of very nearly one million, to say nothing of numerous villages so formed and inhabited as to share nearly all the ordinary characteristics of a town. Of the thirty towns of 1851, only twenty-four could be considered towns in 1801; and several of those might rather be set down as large villages. The six towns undoubtedly new are Bacup, Rawtenstall, Over-Darwen, Leigh, Horwich, and Hyde.

In 1801 the town population of this eastern region formed nearly half of the whole (231 parts out of 512). In 1851 it formed nearly two-thirds of the whole (999 parts out of 1556). In the fifty years the general population had increased by 203, and the town population by 325 per cent.

In the five districts of the *Western* (or Liverpool) region, the whole population increased from 138,000 to 563,000, or 307 per cent. Here there was in 1801 only one large town (Liverpool), and three small ones (Ormskirk, St. Helens, and Prescot.) To these, in 1851, had been added Southport. Birkenhead might also be classed as a new town, but I have preferred treating it, as I think it may more accurately be deemed, as a southern section of Liverpool. The towns of 1801 had an aggregate population of 93,700, and those of 1851 of 474,600, an increase of more than 400 per cent. And in 1851 the town population formed more than two-thirds of the whole (93 parts out of 138).

In the seven districts of the *Southern* (or Cheshire) region, the whole population increased from 143,000 to 249,000, an increase of only seventy-five per cent. But in 1801 there were here only five towns, and in 1851 this number had risen to eleven. Here, then, we see a very moderate increase of the general population accompanied by a rapid increase in the mere number of towns. The new towns are Runcorn, Frodsham, Altrincham, Knutsford, Sandbach, and Crewe. The town population increased more rapidly than the total; yet not with any remarkable degree of rapidity—being only from 44,000 to 99,000, or 125 per cent.

Hitherto we have compared only the censuses of 1801 and 1851. To introduce the other four censuses, and thence to mark the rates of increase in the towns and in the country districts, in each period of ten years—though it would undoubtedly throw much additional light on the probable future increase in particular localities, as well as on the causes and character of the increase already observed—would expand too much this, the first, section of the inquiry. It will therefore fall into the second. And in the third and concluding section we hope to deal with the sources of the increased population, and with its principal occupations.

APPENDIX.

TABLE I.

Registration District.	Area excl. Water.	Population.		Alteration.		Per Cent.	
	Acres.	1801.	1851.	Increase.	Dec.	+	−
Ulverstone	135,043	17,887	30,556	12,669		71	
Lancaster	138,746	24,942	34,660	9,718		39	
Garstang	61,192	9,647	12,695	3,048		32	
Fylde	54,587	11,327	22,002	10,675		94	
Clitheroe*	114,697	15,143	22,478	7,335		48	
Northern Region	504,265	78,946	122,391	43,445		55	
Burnley	54,126	24,419	63,868	39,449		162	
Haslingden	26,681	17,265	50,424	33,159		192	
Blackburn	43,569	33,173	90,738	57,565		174	
Preston	66,340	29,899	96,545	66,646		223	
Chorley	52,213	21,449	37,701	16,252		76	
Wigan	47,018	34,565	77,539	42,974		124	
Leigh	23,610	17,557	32,734	15,177		86	
Bolton	43,896	40,763	114,712	73,949		181	
Bury	32,990	31,852	88,815	56,963		179	
Rochdale	35,340	26,577	72,515	45,938		173	
Oldham	16,872	26,646	86,788	60,142		226	
Manchester	12,628	81,299	228,433	147,134		181	
Salford	4,830	18,525	87,523	68,998		372	
Barton-upon-Irwell	23,279	15,173	31,585	16,412		108	
Chorlton	11,549	9,342	123,841	114,499		1226	
Ashton-under-Lyne	38,657	27,371	119,199	91,828		335	
Stockport	30,709	32,772	90,208	57,436		175	
Macclesfield	81,561	24,215	63,327	39,112		162	
Eastern Region	645,868	512,862	1,556,495	1,043,633		203	
Ormskirk	87,278	18,479	38,307	19,828		107	
Prescot	51,154	20,703	56,074	35,371		171	
West Derby	37,752	11,994	153,279	141,285		1178	
Liverpool	1,560	77,653	258,236	180,583		233	
Wirrall	54,155	9,410	57,157	47,747		507	
Western Region	231,899	138,239	563,053	424,814		307	
Warrington	29,794	19,602	36,164	16,562		85	
Runcorn	43,636	11,408	25,797	14,389		126	
Altrincham	73,665	21,684	34,043	12,359		57	
Congleton	52,889	14,803	30,512	15,709		106	
Northwich	65,445	17,252	31,202	13,950		81	
Nantwich	121,051	24,163	37,986	13,823		57	
Great Boughton	105,718	33,704	53,294	19,590		58	
Southern Region	492,198	142,616	248,998	106,382		75	
Grand Total	1,874,230	872,663	2,490,937	1,618,274		185	

* Including Tosside, in Settle district, Yorkshire.

TABLE II.

TOWNS AS THEY STOOD IN 1851, WITH THE ESTIMATED OR KNOWN POPULATION OF THE SAME AREAS IN 1801. IN ORDER OF POSITION.

Towns.	Area.	Population.		Increase.		Density, 1851.
	Acres.	1801.	1851.	No.	℔ Cent.	℔ 100 acres.
Ulverstone	450	2737	6433	3696	135	1429
Lancaster	870	10135	15982	5847	58	1837
Fleetwood	250	—	3121	3121	New	1248
Blackpool	180	198	2180	1982	1001	1211
Kirkham	280	1543	2777	1234	80	992
Clitheroe	475	838	6604	5766	688	1390
Northern Region	2505	15451	37097	21646	140	1481
Colne	475	2476	6644	4168	168	1399
Burnley	1225	2224	20828	18604	837	1700
Accrington	500	1946	7481	5535	284	1496
Bacup	475	1246	6981	5735	460	1470
Rawtenstall	500	650	4844	4194	645	969
Haslingden	430	2790	6154	3364	121	1431
Over Darwen	475	787	7020	6233	792	1478
Blackburn	2300	11330	45536	34206	302	1980
Preston	2753	12174	69542	57368	471	2526
Chorley	600	2891	8907	6016	208	1485
Wigan	1961	10901	33761	22860	210	1722
Hindley	385	1532	5285	3753	245	1373
Leigh	385	700	5206	4506	644	1352
Atherton	250	2109	2780	671	32	1112
Tyldesley	280	1809	3608	1799	99	1289
Horwich	180	315	2104	1789	568	1169
Bolton	1820	17429	60711	43282	248	3336
Radcliffe	363	1847	5002	3155	171	1378
Bury	1470	6852	27762	20910	305	1889
Heywood	750	2800	12194	9394	336	1626
Rochdale	1130	8500	29195	20695	243	2584
Middleton	400	1765	5740	3975	225	1435
Eccles	325	2000	4108	2108	105	1264
Manchester	9785	94409	404808	310399	329	4137
Oldham	2317	9024	46820	37796	419	2021
Ashton-under-Lyne	1525	4837	40723	35886	742	2670
Staleybridge	1240	1500	23877	22377	1492	1926
Hyde	650	863	10051	9188	1065	1546
Stockport	2155	18880	53610	34730	184	2488
Macclesfield	1720	9293	38648	29355	316	2247
Eastern Region	38824	235879	999930	764051	324	2576
Southport	350	100	4765	4665	466	1362
Ormskirk	385	2214	5548	3334	151	1441
St. Helens	900	3167	14866	11699	369	1652
Prescot	500	3665	7393	3728	102	1479
Liverpool, (north)	11495	84706	399466	314760	372	2708
„ (south)*	4828	1212	42639	41427	3418	
Western Region	18458	95064	474677	379613	399	2572
Warrington	1290	10621	22392	11771	111	1736
Runcorn	550	1179	8049	6870	583	1463
Frodsham	180	1170	2099	929	79	1166
Northwich	957	3974	8338	4364	110	871
Altrincham	357	1602	4298	2696	168	1204
Knutsford	250	1802	3127	1325	74	1251
Congleton	650	3461	10020	6559	190	1541
Sandbach	225	1194	2752	1558	130	1223
Crewe	350	81	4491	4410	544	1283
Nantwich	400	3353	5426	2073	62	1356
Chester	2008	15474	27916	12442	80	1390
Southern Region	7217	43911	98908	54997	125	1370
Total	67004	390305	1610612	1220307	313	2404

* Birkenhead.

TABLE III.

AREA AND POPULATION OF TOWNS IN 1801 AND 1851, WITH THE INCREASE (1801-51) IN POPULATION, AND RATE PER CENT. OF INCREASE.

TOWNS.	1801.		1851.		Increase in Popn.	
	Area, Acres.	Populatn.	Area, Acres.	Populatn.	Number.	₩ Cent.
Ulverstone	250	2700	450	6433	3733	138
Lancaster	650	10000	870	15982	5982	60
Fleetwood	—	—	250	3121	—	—
Blackpool	—	—	180	2180	—	—
Kirkham	—	—	280	2777	—	—
Clitheroe	—	—	475	6604	—	—
Northern Region	900	12700	2505	37097		
Colne	200	2400	475	6644	4244	177
Burnley	—	—	1225	20828	—	—
Accrington	—	—	500	7481	—	—
Bacup	—	—	475	6981	—	—
Rawtenstall	—	—	500	4844	—	—
Haslingden	250	2700	430	6154	3454	128
Over Darwen	—	—	475	7020	—	—
Blackburn	700	10500	2300	45536	35036	334
Preston	750	11400	2753	69542	58142	510
Chorley	250	2700	600	8907	6207	230
Wigan	700	10400	1961	33761	23361	225
Hindley	—	—	385	5285	—	—
Leigh	—	—	385	5206	—	—
Atherton	180	2070	250	2780	710	34
Tyldesley	—	—	280	3608	—	—
Horwich	—	—	180	2104	—	—
Bolton	900	16425	1820	60711	44286	270
Radcliffe	—	—	363	5002	—	—
Bury	475	6250	1470	27762	21512	344
Heywood	250	2450	750	12194	9744	398
Rochdale	550	8200	1130	29195	20995	256
Middleton	—	—	400	5740	—	—
Eccles	—	—	325	4108	—	—
Manchester	2600	87500	9785	404808	317308	363
Oldham	600	7000	2317	46820	39820	569
Ashton-under-Lyne	350	3500	1525	40723	37223	1064
Staleybridge	—	—	1240	23877	—	—
Hyde	—	—	650	10051	—	—
Stockport	1000	18350	2155	53610	35260	192
Macclesfield	600	9000	1720	38648	29648	329
Eastern Region	10355	200845	38824	999930		
Southport	—	—	350	4765	—	—
Ormskirk	—	—	385	5548	—	—
St. Helens	250	2900	900	14866	11966	413
Prescot	280	3575	500	7393	3818	107
Liverpool, North	2500	81000	11495	399466	318466	446
„ South	—	—	4828	42639	42639	
Western Region	3030	87475	18458	474677		
Warrington	650	10400	1290	22392	11992	115
Runcorn	—	—	550	8049	—	—
Frodsham	—	—	180	2099	—	—
Northwich	600	3850	957	8338	4488	117
Altrincham	—	—	357	4298	—	—
Knutsford	—	—	250	3127	—	—
Congleton	280	3400	650	10020	6620	195
Sandbach	—	—	225	2752	—	—
Crewe	—	—	350	4491	—	—
Nantwich	250	3300	400	5426	2126	64
Chester	1500	15350	2008	27916	12566	82
Southern Region	3280	36300	7217	98908		
TOTAL	17565	337320	67004	1610612		

TABLE IV.

Comparative Progress of Large Towns and the remaining part of the Country, in Decennial Periods.

Towns.	Population.					
	1801.	1811.	1821.	1831.	1841.	1851.
Liverpool, North	85786	108907	145960	221576	302929	396601
„ South	1462	1768	2570	7087	18913	42639
Manchester	98020	119633	166300	244297	320654	416350
Preston	12174	17360	24859	33871	50887	69485
Bolton	18574	25551	32973	43396	52229	63217
Stockport	22036	28287	35571	46868	56061	59163
Oldham	12024	16690	21662	32381	42595	52820
Blackburn	11980	15083	21940	27091	36629	46536
Ashton-under-Lyne	15632	19052	25967	33597	46304	56621
Macclesfield	11064	15129	21819	32068	34723	41189
Wigan	11951	15125	19078	22677	27947	35611
Rochdale	17780	22036	27798	35764	44159	54979
Chester	15718	16800	20850	22244	23860	27648
Bury	9152	11302	13480	19140	25912	31966
Staleybridge	2792	4157	6705	17121	26299	30997
Warrington	11321	12682	14822	18184	21342	23342
Burnley	5224	7207	10990	13368	18956	27042
Lancaster	10308	10501	11427	13964	15754	16149
St. Helens	5737	7283	8274	11026	16475	22754
Heywood	4283	5148	6552	10429	14856	16048
Hyde	1063	1806	3355	7144	10170	11569
Congleton	3861	4616	6405	9352	9222	10520
Totals	388002	486123	649367	922645	1216886	1554136
Balance	484661	577043	681400	754873	847995	927831
Lancashire and Cheshire	872663	1063166	1330767	1677518	2064881	2481967

TABLE V.

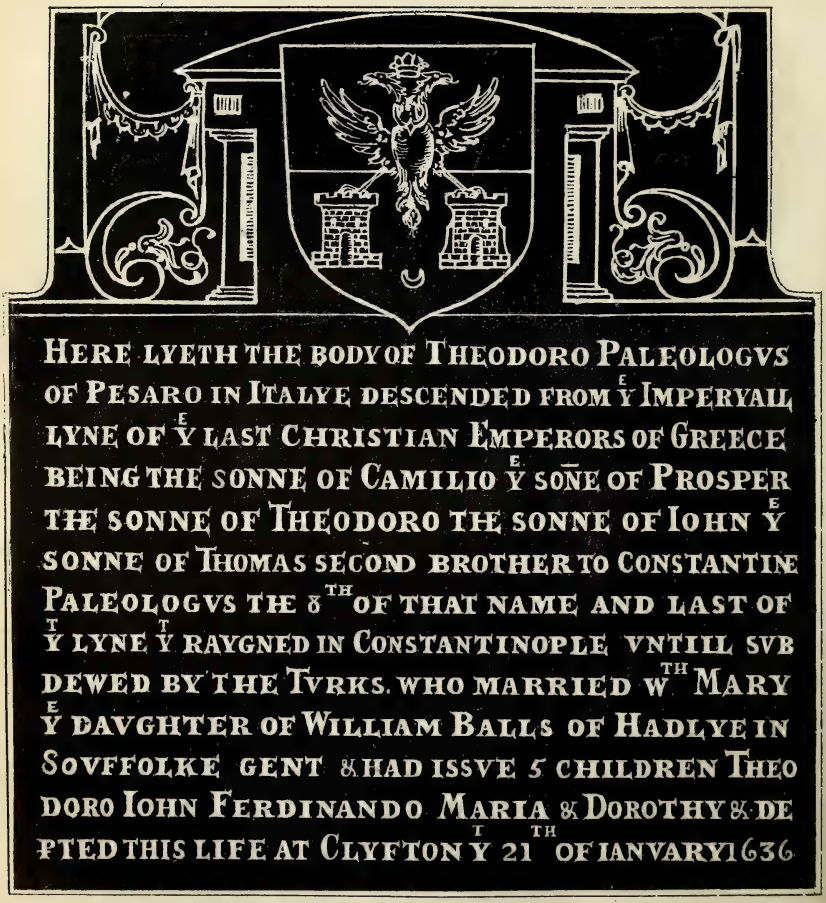
Registration District.	Town Part.			Country Part.										
	Area.	Population.		Area.	Population.		Alteration		% Cent.		Density per sq. mile.		
	Acres.	1801	1851	Acres.	1801	1851	Inc.	Dec	+	—	1801	1851	Inc.
Ulverstone	450	2737	6433	134593	15150	24123	8973		59		72	115	43
Lancaster	870	10135	15982	13876	14807	18678	3871		26		69	87	18
Garstang				61192	9647	12695	3048		32		101	133	32
Fylde	710	1741	8078	53877	9586	13924	4338		45		114	165	51
Clitheroe*	475	838	6604	114222	14305	15874	1569		11		80	89	9
Northern Region	2505	15451	37097	501760	63495	85294	21799		34		81	109	28
Burnley	1700	4700	27472	52426	19719	36396	16677		85		241	444	203
Haslingden	1905	6632	25160	24776	10633	24964	14331		135		275	645	370
Blackburn	2775	12117	52556	40794	21056	38182	17126		81		330	599	269
Preston	2753	12174	69542	63587	17725	27003	9278		52		178	272	94
Chorley	600	2891	8907	51613	18558	28794	10236		55		230	357	127
Wigan	2346	12433	39046	44672	22132	38493	16361		74		317	551	234
Leigh	915	4618	11594	22695	12939	21140	8201		63		365	596	231
Bolton	2000	17744	62815	41896	23019	51897	28878		125		352	793	441
Bury	2583	11499	44958	30407	20353	43857	23504		115		428	923	495
Rochdale	1130	8500	29195	34210	18077	43320	25243		140		338	810	472
Oldham	2717	10789	52560	14155	15857	34228	18371		116		717	1548	831
Manchester	4005	72331	210796	8623	8968	17637	8669		97		666	1309	643
Salford	2540	16938	80773	2290	1587	6750	5163		325		444	1886	1442
Barton-upon-Irwell	675	2300	6608	22604	12873	24977	12104		94		364	707	343
Chorlton	2890	4840	110739	8659	4502	13102	8600		191		333	968	635
Ashton-under-lyne	2765	6337	64600	35892	21034	54599	33565		160		375	974	599
Stockport	2805	19743	63661	27904	13029	26547	13518		104		299	609	310
Macclesfield	1720	9293	38648	79841	14922	24679	9757		65		120	198	78
Eastern Region	38824	235879	999930	607044	276983	556565	279582		101		292	587	295
Ormskirk	735	2314	10313	86543	16165	27994	11829		73		120	207	87
Prescot	1400	6832	22259	49754	13871	33815	19944		144		178	435	257
West Derby	9935	7053	141230	27817	4941	12049	7108		144		114	277	163
Liverpool	1560	77653	258236										
Wirrall	4828	1212	42639	49327	8198	14518	6320		77		106	188	82
Western Region	18458	95064	474677	213441	43175	88376	45201		105		129	265	136
Warrington	1290	10621	22392	28504	8981	13772	4791		53		202	309	107
Runcorn	730	2349	10148	42906	9059	15649	6590		73		135	233	98
Altrincham	607	3404	7425	73058	18280	26618	8338		46		160	233	73
Congleton	875	4655	12772	52014	10148	17740	7592		75		125	218	93
Northwich	957	3974	8338	64488	13278	22864	9586		72		132	227	95
Nantwich	750	3434	9317	120301	20729	28069	7340		35		110	149	39
Great Boughton	2008	15474	27916	103710	18230	25378	7148		39		112	157	45
Southern Region	7217	43911	98908	484981	98705	150090	51385		52		130	198	68
Grand Total	67004	390305	1610612	1897226	482358	880325	397967		83		171	312	141
Area covered by Town since 1801	49439	52985		49439	52985								
Corrected figures for 1801	17565	337320		1856665	535343						185	312	127

* Including Tosside, in Settle District, Yorkshire.

COPY OF RUBBING

TAKEN FROM THE

TOMB OF THEODORO PALEOLOGUS, LANDULPH CHURCH, CORNWALL.


HERE LYETH THE BODY OF THEODORO PALEOLOGVS
OF PESARO IN ITALYE DESCENDED FROM Ye IMPERYALL
LYNE OF Ye LAST CHRISTIAN EMPERORS OF GREECE
BEING THE SONNE OF CAMILIO Ye SONE OF PROSPER
THE SONNE OF THEODORO THE SONNE OF IOHN Ye
SONNE OF THOMAS SECOND BROTHER TO CONSTANTINE
PALEOLOGVS THE 8TH OF THAT NAME AND LAST OF
Ye LYNE Ye RAYGNED IN CONSTANTINOPLE VNTILL SVB
DEWED BY THE TVRKS. WHO MARRIED WTH MARY
Ye DAVGHTER OF WILLIAM BALLS OF HADLYE IN
SOVFFOLKE GENT & HAD ISSVE 5 CHILDREN THEO
DORO IOHN FERDINANDO MARIA & DOROTHY & DE
PTED THIS LIFE AT CLYFTON Ye 21TH OF IANVARY 1636

A VISIT TO THE TOMB OF THEODORO PALEOLOGUS.

By John Thomas Towson, Esq.

(Read 21st May, 1857.)

During a recent visit to the west of England it occurred to me that it might be interesting to this Society to obtain such information connected with the latter part of the history of the family of the Paleologi, as the records of the parish of Landulph afford, and also to procure a rubbing from a monumental brass on the wall of the Church over the tomb of Theodoro Paleologus. Having introduced myself as a member of this Society, I received every courtesy and attention from the Rector, the Rev. W. Seymour. It is the result of this visit I have now the honour of laying before this Society.

Landulph is a parish in Cornwall, situated on the banks of the Tamar, two miles beyond Saltash. Its Church is a very ancient one, and bears many records, extending over at least three centuries, of the connexion that existed between the principal families of this parish and the affairs of those allied to the house of Paleologus. Although the Church is said to have been rebuilt at or about the commencement of the fourteenth century, by Nicholas D'Awney or Dawney, one of the Crusaders who returned after the fall of Ptolemais, still an inspection of the building leads us to believe that it was rather enlarged than rebuilt at that period. The arch of entrance, and the "bustos" at each side of the ceiling between the chancel and nave, appear to be Saxon. At the period named, there can be no doubt that the lord of the manor of Landulph was much interested in Byzantine affairs. About the middle of the fourteenth century Sir Edward Courtenay inherited the manor, by marriage with Emmeline, daughter and heiress to Sir John Dawney. Between the years 1477 and 1486, Peter Courtenay, Bishop of Exeter, was lord of the manor, except during the time he was attainted in 1484 and part of 1485. The Bishop had joined Sir Edward

Courtenay (afterwards Earl of Devon), in the conspiracy with Richmond against Richard III., which having failed, he fled with the Earl, but returning with him to the battle of Bosworth, in which he was personally engaged, the attainder was removed, and the manor of Landulph restored by Henry VII.

The Archæologia of Landulph settles a disputed point on which Cleveland differs from most other historians in asserting that Peter, Bishop of Exeter, was son of Sir Philip Courtenay, of Powderham Cleveland is decidedly wrong. The Courtenays of Powderham had no family connexion with the D'Awneys, by which they could inherit Landulph. The Bishop was brother of the Earl of Devon, as most historians assert, being a descendant from Sir Edward Courtenay. This is proved by his arms, and those of the Earl of Devon, impaling those of the D'Awney family, from whom the manor of Landulph was inherited. After the restoration of the manor of Landulph to Peter Courtenay in 1485, it remained with that family till 1539, when in consequence of the attainder of the Marquis of Exeter, it was lost; and although Queen Mary removed the attainder, and restored Edward Courtenay to the Earldom of Devon, and the Manor of Landulph is specially mentioned in the Act of Restoration, it has ever since its confiscation remained *de facto* a portion of the Duchy of Cornwall.

I need scarcely here detail how intimately the family of the Courtenays were connected, during a considerable portion of this period, with Byzantine affairs, but merely remark that on this account, in chapter 61 of the "Decline and Fall of the Roman Empire," Gibbon has thought it necessary to introduce a "digression on the family of Courtenay," and that three members of that family were Emperors of Constantinople during the thirteenth century.

The principal seats in Landulph Church were erected by Peter Courtenay, and a large number of those curious carvings on the panels, common at that period, still remain. The most interesting of these are the armorial bearings of the principal families who have resided in this parish. In the nave there are the arms of the see of Exeter, a sword in pale surmounted by two keys in saltire; arms of Courtenay, three torteaux with label of three points; in the chancel the arms of Courtenay, surmounted by a mitre and the arms of the Bishopric of Exeter. On the Clifton seats are the arms of Lower, Moyle, Trethirf, Flamank, Trevarthin, Valetort, Densil,

Bodragan, Prideaux, Carminow, Reskymer, Arundell, Killigrew, Langdon, Trevenor, Upton, Trefry, Treveerbyn and Talbot. There is in like manner the arms of a knight who had been engaged in the Crusades, a chevron between three Saracen heads affrontes.

At the commencement of the seventeenth century we find that Sir Nicholas Lower was the principal inhabitant of Landulph, as occupier of Clifton, the mansion of the Arundells. It appears that he was collaterally connected with the family of Paleologus, his brother Sir Francis Lower, having married a lady of Grecian origin, a native of Constantinople, and in some way connected with the family of Paleologus. Her name was Antonetao Mulier Turcom, daughter of Ocker, the son of Sizzeksen. It is supposed, however, that Sir Nicholas was more directly connected with the Paleologi, since Theodoro Paleologus, with his family of five children, became guests of Sir Nicholas Lower, at Clifton, between the years 1620 and 1630, and continued so till his death.

Dame, the wife of Sir Nicholas Lower, died in 1638, and Sir Nicholas seventeen years after the death of his wife. Their monumental inscriptions read as follows :—

Heere lyeth bvried the body of dame Elizabeth Lower late wife vnto Sr Nicholas Lower of Clifton Kt Davghter vnto Sr Henry Killigrew of London Kt antiently descended from ye hovse of Arwennich in Cornwall and from ye yovngest of the learned davghters of Sr Anthony Cooke Kt a maide of honovr to Qveene Elizabeth who for trew virtve piety & learning came nothing short (that I may modestly speake) of any her ancestors and for her singvlar covrtesy to all & amiable svbjection to her hvsband (a vertve rare & high) I thinke can hardly be matchd who deserves a far ampler character than can be containd in so narrow a roome, she dyed at Clifton in Cornwall the sixt day of Jvne in the yeare of ovr Lord 1638 and expects heere a Glorivs resvrrection.

This mural brass is surmounted by the arms of Killigrew, impaled by that of Lower, chevron between three roses, crest unicorn's head, the same as that on the black marble tomb in which Sir Nicholas and his lady were buried.

The mural inscription of Sir Nicholas Lower is as follows :—

Here lyeth bvried ye body of Sr Nicholas Lower of Clifton Knight, descended of the Hovse of St. Winowe) the sonne of Thomas Lower and Jane his wife one of the Coeheyres of Reskymer who had issve six sonnes viz Sr William Lower Knight desceased in Carmarthenshire, John Lower, the (said Sr Nicholas Lower) Sir Francis Lower Knight Thomas Lower desceased in London and Alexander

Lower) (He married with Elizabeth one of the davghters of Sr Henry Killegrve of London Kngt dyed with ovt issve svrrendring his sovle to his redeemer at Clifton ye 17th of Maye Ao Dni 1655.

The arms are the same, except that the crest and mullet of difference are omitted.

Theodoro Paleologus died in 1636. The monumental brass over his tomb is one of considerable interest, and I have the honour of presenting to this Society a rubbing, a copy of which is annexed. The inscription is surmounted by the imperial arms proper of the empire of Greece. An eagle displayed with two heads, legs resting on the houses of Rome and Constantinople, an imperial crown over, and the crescent of difference for second son between the gates. Thomas was the fifth son of Manuel but the second to Constantine, to whom the arms proper as Emperor belonged.

The family of Theodoro continued to reside at Clifton, after the death of Sir Nicholas, and Maria Paleologus remained a resident there till her death, which occurred in 1674. Some believe that the family of Lady Lower, that of Killigrew, was connected with that of Paleologus, and support this hypothesis by reference to the amorial bearings of that family. It is an eagle displayed with two heads within border bezanty. The eagle on the brasses is the same as that of Paleologus, the gates and imperial crown being omitted, and the border bezanty added. The border bezanty proves that the baronet who first bore this coat was a Crusader, and this strengthens the probability that such a connexion might have existed. The name Killigrew, the armorial bearing, and the baronetcy, were conferred at the same time. The last became extinct about the middle of the seventeenth century, but some collateral branches of that family retain both the name and arms to the present day.

Had the result of our investigations been consistent with the testimony of Byzantine historians, we should have little further to add than to trace the five children of Theodoro; having come to this conclusion that Theodoro was the eldest son of Camilio, the eldest son of Prosper, the eldest son of Theodoro, the eldest son of John, the eldest son of Thomas, the next brother to Constantine. But Gibbon designates Andrew the eldest son of Thomas, and Manuel the second son. He refers to these two sons as though they were his only children. In chapter 68 he says, "It is not

easy to pronounce whether the servitude of Demetrius, or the exile of his brother Thomas, be the most inglorious. On the conquest of the Morea the Despot (Thomas) escaped to Corfu, and from thence to Italy, with some naked adherents: his name, his sufferings, and the head of the apostle St. Andrew entitled him to the hospitality of the Vatican; and his misery was prolonged by a pension of six thousand ducats from the Pope and Cardinals. His two sons Andrew and Manuel were educated in Italy, but the eldest, contemptible to his enemies and burthensome to his friends, was degraded by the baseness of his life and marriage. A title was his sole inheritance, and that inheritance he successively sold to the kings of France and Arragon." And again, in the same chapter, "Manuel Paleologus, the second son, was tempted to revisit his native country. His visit might be grateful, and could not be dangerous to the Porte: he was maintained at Constantinople in safety and ease; and an honourable train of Christians and Moslems attended him to his grave. If there be animals of so generous a nature that they refuse to propagate in a domestic state, the *last of the imperial race* must be ascribed to an inferior kind: he accepted from the Sultan's liberality two beautiful females; and his surviving son was lost in the habit and religion of a Turkish slave." Thus Gibbon ignores altogether the existence of John, the son of Thomas.

This at first appears a most serious difficulty to surmount, but we believe that the Archæologia of Landulph alone is sufficient to prove that this omission must have been an error on the part of Gibbon. Some years since the tomb in which Theodoro is said to have been buried, was accidentally opened, and a body was there found in a single oak coffin, in so perfect a state as to determine that he was in stature far beyond the common height, that his features were oval, and nose very aquiline, all of which are family traits. He had a very white beard, low down on his breast.

There is therefore no doubt that some one, believed to have been Theodoro Paleologus, was buried there, and the registers of this and other neighbouring parishes, as we shall hereafter find, establish the fact that a person representing himself to have been such, had lived and died in Landulph. And it is most improbable that an impostor could have succeeded in deceiving the residents of this parish. We must not, in this investigation, regard Landulph as an obscure parish, in a remote part of England, but as the residence at times of the Talbots, the Killigrews, the Valetorts, and several others who owed their family prestige to their ancestors having been Crusaders, and there-

fore well-versed in Byzantine affairs. This is shown by the carvings on the doors of the principal seats in the Church, of torteaux, crosses, lions' heads, bezants, Saracens' heads, and other charges which were assumed by Crusaders on their return, or by their families, in commemoration of the expeditions in which they had been engaged. But beyond all others the Courtenays were the last persons in the kingdom who could be imposed on in such a matter. We have also the assurance, on the monument of Lady Lower, that she was daughter of the youngest of the learned daughters of Sir Anthony Cooke, and that for learning she came nothing short of any of her ancestors. We know that one of the accomplishments which distinguished the daughters of Sir Anthony Cooke as learned, was their extraordinary proficiency in the knowledge of the Greek language, both ancient and modern, and this latter would no doubt include a full knowledge of all matters connected with the Byzantine Empire. Lady Lower was also a maid of honor to Queen Elizabeth, at the time when the Czar, Ivan the Terrible, grandson of Zoe Paleologus, was one of the suitors of "Her most gracious and drede Majestie," and therefore she possessed all the knowledge of the family of Paleologus which a connexion with court at that period could confer. Nothing appears therefore more improbable than that in this matter Lady Lower could be so deceived as to receive such an impostor as a guest. On the contrary, we can understand the motives which might have induced the occupants of Clifton to invite the Paleologi to become residents at their mansion.

But we do not depend alone on the Archæologia of Landulph. The existence of this direct branch of the Paleologus family, through Thomas, brother of Constantine, was better known in Italy and Greece, than in this country. During the War of Independence in Greece a deputation was appointed by the provisional government to inquire whether any of the family of Paleologus existed. This deputation proceeded to Italy and other places where the Paleologi had become refugees, and amongst other places to Landulph, to carry out the object of their appointment. At that time the Rev. Frances Vyvyan Jago Arundell was rector of Landulph. That gentleman having given much attention to all matters connected with archæology, rendered great assistance in this investigation, and also gained much valuable information respecting the earlier history of the Paleologus family. He ascertained that Thomas was married in 1430, to the daughter of a Genoese nobleman, Catherine, the mother of John, Helena, and Zoe.

Andrew was born on the 17th of January, 1453. This was twenty-three years after the marriage to Catherine. On the 11th January, 1455, Manuel was born, and five years after this (1460) his sister Helena was married to Lazarus, despot of Servia, whose arms now impale those of the Empire of Constantinople. Subsequently (1475) Zoe, another daughter of Thomas, was married to Ivan III., grand duke of Muscovy, and it is through this marriage that a claim is set up in favour of the present Czars of Russia being descendants from the Emperors of Constantinople. There is no doubt but that it was through the marriage of Ivan III. to Zoe Paleologus that the Czars of Russia obtained the two-headed eagle. She brought as her dowry to the Grand Prince the arms of the Grecian Empire, the cognisance of sovereigns of Russia having previously been the figure of St. George killing the dragon. All subsequent Czars have borne the two-headed eagle of Constantinople as arms of dominion, even where, as in the case of Boris Godonof, no claim could have been set up of being related in any manner to the descendants of Zoe Paleologus. Great discrepances however exist on this subject amongst Byzantine and Russian historians. Some represent the second consort of Ivan III. as being Sophia, daughter of Manuel II. But this cannot have been the case, since the second wife of Ivan gave birth to a prince at least 60 years after the death of Manuel, who had been several years a widower. The first consort of Ivan, who was the daughter of the Hospodar of Tver, was probably called Sophia, this being the name of a princess who was married to a Romanoff, through which marriage the present Czars are descendants from Ivan III. and may be thus regarded as representatives of the house of Rurik.

The founder of the family of Romanoff was a Prussian of obscure origin, who settled in Russia in 1350, but being distinguished by public virtue, brilliant achievements, and zeal for the welfare of his adopted country, he rose rapidly into eminence. For 250 years it was the policy of that family to contract alliances with every branch of the Russian nobility. To this policy they owe the imperial crown, and especially to an acknowledged relationship to the family of Rurik, but it is scarcely possible that this popularity arose from his connexion with an issue of the second marriage that had been so offensive to the boyards as to have given rise to a revolt against Ivan, which required the severest measures to suppress.

Taking into consideration the acknowledged difficulty which occurs in

tracing genealogy in Byzantine and Russian annals at this period,* we do not believe that any of the discrepancies to which we have alluded throw any doubt on our position, viz., that Thomas Paleologus had five children, John, Andrew, Manuel, Helena, and Zoe, and that Theodoro, the subject of this paper, was the direct descendant from John, the eldest son of Thomas. And Theodoro also, as shown by the monumental brass, left five children. It then remains for us to endeavour to trace, most probably, the last of the descendants of Theodoro Paleologus.

In the list of the army raised under Robert, Earl of Essex, we find the name of Theodoro Paleologus, as a lieutenant in the Lord Saint John's regiment. This was while Essex was in the west of England, and previously to his taking arms against the king, and we may presume from the fact, that the brothers of Theodoro bore arms as Cavaliers, that he left the army when Essex joined the parliamentary cause, for we find that he died a sailor on the 1st of August, 1693, whilst serving on board of the "Charles II.," commanded by Captain Charles Gibson, but his rank is not stated. He had acquired landed property, which he left to his wife Martha. He makes no mention of any issue in his will, and as it was customary at that period to do so, even when children were disinherited, it is presumed that he left no issue.

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* The discrepancies in Byzantine and Russian history have evidently been increased by the misconceptions of modern authors. Thus it is made to appear that two princesses of the house of Paleologus were married to Muscovite princes; Sophia, daughter of Manuel II., to Ivan III., and Zoe, daughter of Thomas, to John Basilides, or Basilius. But all these names belong to the same grand prince, or czar, Ivan III. (Basilovitz). By most historians Demetrius is represented as being the fifth son of Manuel II., and Thomas as the sixth. Although the weight of evidence appears rather in favour of this statement, we have given the preference to the contrary, because it agrees with the Archæologia of Landulph. The Russian history of this period contains also many discrepancies. Thus, by Kelly, the second marriage of Ivan III. is said to have taken place after the death of his first consort in 1485. The historians of the fifteenth century disagree to such an extent as to render it difficult to decide whether Ivan's marriage with Zoe took place before or after the death of his first consort. They are equally divided in assigning, as the period of the birth of Ivan III., the years 1438 or 1440. The existence of a regency between the death of Basil V. and the reign of Ivan IV. has caused the number of years of the reign of the last named sovereign to be variously stated. Haydn is, without doubt, wrong in representing the murdered Dmetri as the son of Feodore, who was only the elder by ten years. We also find that Boris Godonof at first pronounced Dmetri to be illegitimate, because he was the son of the last of Ivan's seven wives, such marriage being contrary to the canons of the Greek Church.

Soon after the death of their father, John and Ferdinando served under Major Lower, nephew of Sir Nicholas Lower, on the king's side. Ferdinando appears to have been a lieutenant, but the rank of John is unknown. They fought with the Major at the battle of Naseby. Major Lower gallantly fell, and it is supposed that John fell by his side. Ferdinando escaped to Barbadoes, his maternal grandfather, William Bales, of Hadlye, in Suffolk, having estates in that island. Here he resided thirty years at Clifton Hall, so named by him in remembrance of the hospitality he had received at the mansion of Clifton in Landulph. He was married here, and had one son, Theodorus. Ferdinando died in September, 1678, and was buried on the 3rd of October. He left one-half of his plantation to his wife, Rebecca Paleologus, for her life, with the remainder to his son, Theodorus Paleologus, except some trifling legacies, two of which he bequeathed to his sisters, Mary Paleologus and Dorothy Arundell. Theodorus died soon after, on which the whole of the landed property devolved on his mother. If, therefore, any descendants of this branch remain, it must be in the female line. Several respectable families in Barbadoes claim thus to be allied to the family of Paleologus. But it appears improbable that Ferdinando left a daughter, no mention being made of her in his will. It has also been stated, that the assumed alliance with the family of Paleologus was a family connexion with the issue of the widow of Ferdinando by a second marriage. During the year 1831 the lead coffin of Ferdinando Paleologus was discovered. There had been two Greek customs observed at the burial of Ferdinando. The coffin was laid in the contrary direction to that which is customary in the west, and the body was imbedded in quicklime. Although the skeleton alone remained it was evident that Ferdinando resembled his father, in being of extraordinary stature. The deputation from the provisional Greek government, to which we have before referred, corresponded with the authorities at Barbadoes, to ascertain whether any of the descendants of Ferdinando were living.

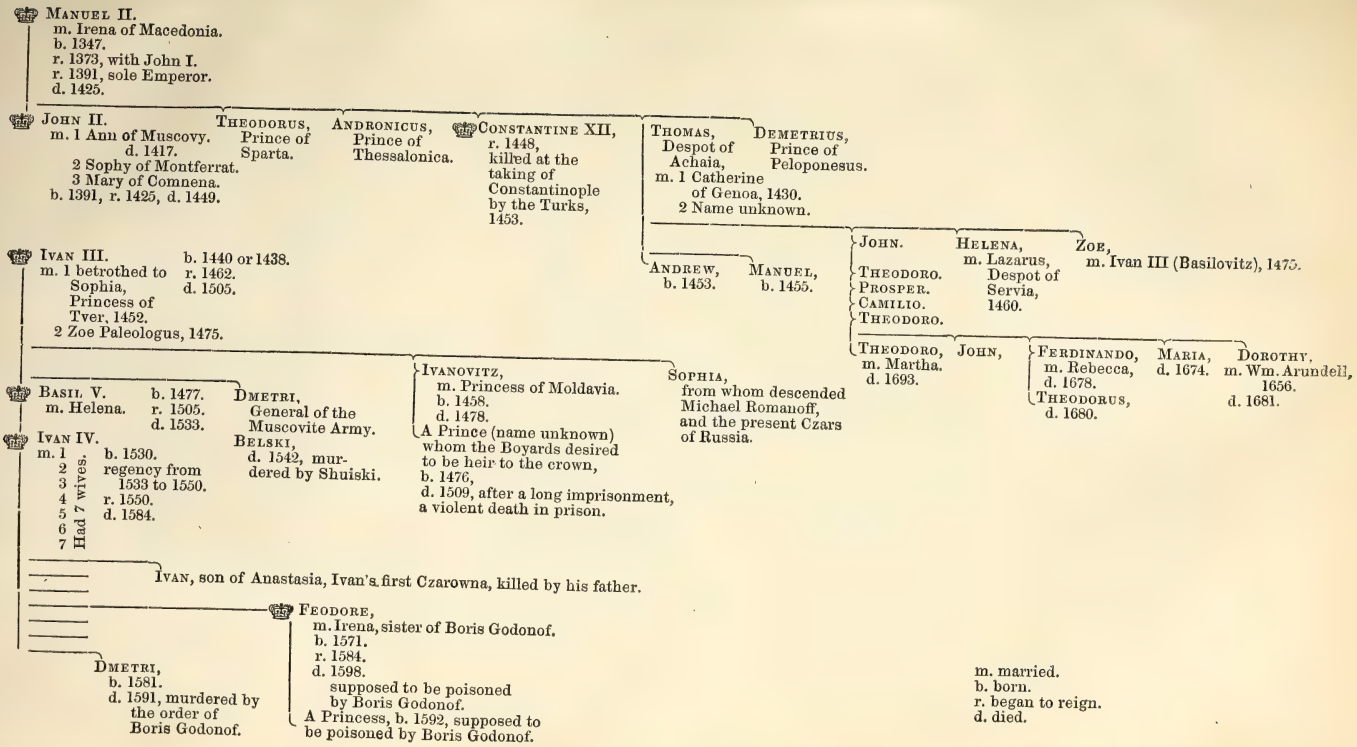
Maria Paleologus continued a resident in Landulph, during thirty-eight years after the death of her father, and died unmarried in the year 1674.

Dorothy was married in 1656, to William Arundell, of St. Mellion, a parish situate about four miles from Landulph. He was one of the grandsons of Alexander Arundell, of Clifton. At the time of this marriage Dorothy was still residing at Landulph, most probably at Clifton, her

marriage was therefore registered in both parishes. The entry in the St. Mellion registry is, "*Dorothea Paleologus de stirpe Imperatorum.*" Soon after their marriage they removed to St. Dominick, about five miles from Landulph; the register of this parish having been accidentally destroyed, there now exists no means of determining whether they had issue. Mr. Arundell has however observed that a Mary Arundell was married to Francis Lee, of Cargreen, and from the date considers it probable that she might have been the daughter of Mary Paleologus, and therefore that the imperial blood may still flow in the bargemen of Cargreen, bearing the name of Lee. It is however improbable that a lady, who at her marriage adopted the unusual method of blazoning her descent from a dynasty which had been extinct for 200 years, as *de stirpe Imperatorum*, should, at the baptism of her daughter, have failed to adopt the usual means of marking the family prestige, and have conferred on her no other Christian name than that of Mary. I do not myself consider that any of the present Arundells are descended from the Arundells of Clifton, because I find that the late Rector, Francis Vyvyan Jago Arundell, who possessed the last of the estates held by a proprietor of that name, took the name of Arundell by letters patent on coming into possession of this property, his paternal name being Jago; nor do I understand that he had even a collateral family connexion with anyone bearing that name. We believe, therefore, that there remains no descendant from Dorothy Paleologus.

I append a genealogical map of the descendants of Manuel II. and also one for the issue of the two marriages of Ivan III. That branch, however, which connects the houses of Rurik and Romanoff, on account of the imperfect data now attainable, is obviously defective. From the same cause there are also other details that claim a greater or less amount of credence. These have already been discussed in pages 217, 218 and 219, and in the foot note page 220.

[Note. The Greek Empire, or "Empire of Constantinople." existed for more than 1000 years, from the accession of Theodosius I. in 385, till the capture of Constantinople by the Turks in 1453. There were in all 72 Emperors; of whom the Paleologi furnished eight (including Alexis III.) They were the last of ten dynasties, (exclusive of the Frank Emperors,) being descended naturally from the Emperors Angeli, who again were descended naturally from the Emperors Comneni.]


Manuel II.
m. Irena of Macedonia.
b. 1347.
r. 1373, with John I.
r. 1391, sole Emperor.
d. 1425.
John II.
m. 1 Ann of Muscovy.
d. 1417.
2 Sophy of Montferrat.
3 Mary of Comnena.
b. 1391, r. 1425, d. 1449.
Theodorus, Prince of Sparta.
Andronicus, Prince of Thessalonica.
Constantine XII, r. 1448, killed at the taking of Constantinople by the Turks, 1453.
Thomas, Despot of Achaia,
m. 1 Catherine of Genoa, 1430.
2 Name unknown.
Demetrius, Prince of Peloponesus.
Andrew, b. 1453.
Manuel, b. 1455.
John.
Theodoro.
Prosper.
Camilio.
Theodoro.
Helena, m. Lazarus, Despot of Servia, 1460.
Zoe, m. Ivan III (Basilovitz), 1475.
Theodoro, m. Martha. d. 1693.
John,
Ferdinando, m. Rebecca, d. 1678.
Theodorus, d. 1680.
Maria, d. 1674.
Dorothy, m. Wm. Arundell, 1656. d. 1681.
Ivan III.
m. 1 betrothed to Sophia, Princess of Tver, 1452.
2 Zoe Paleologus, 1475.
b. 1440 or 1438.
r. 1462.
d. 1505.
Ivanovitz, m. Princess of Moldavia. b. 1458. d. 1478.
A Prince (name unknown) whom the Boyards desired to be heir to the crown, b. 1476, d. 1509, after a long imprisonment, a violent death in prison.
Sophia, from whom descended Michael Romanoff, and the present Czars of Russia.
Basil V.
m. Helena.
b. 1477.
r. 1505.
d. 1533.
Dmetri, General of the Muscovite Army.
Belski, d. 1542, murdered by Shuiski.
Ivan IV.
m. 1 2 3 4 5 6 7 Had 7 wives.
b. 1530.
regency from 1533 to 1550.
r. 1550.
d. 1584.
Ivan, son of Anastasia, Ivan's first Czarowna, killed by his father.
Feodore,
m. Irena, sister of Boris Godonof.
b. 1571.
r. 1584.
d. 1598.
supposed to be poisoned by Boris Godonof.
A Princess, b. 1592, supposed to be poisoned by Boris Godonof.
Dmetri,
b. 1581.
d. 1591, murdered by the order of Boris Godonof.
m. married.
b. born.
r. began to reign.
d. died.

RESULTS OF AN EXAMINATION OF THE RECORDS OF THE LIVERPOOL SELF-REGISTERING TIDE GAUGE, For the Years 1854, 1855, and 1856.

By Lieut. Murray T. Parks, R.N.

(Read 5th March, 1857.)

In April, 1855, Lieut. Lord, my predecessor in the office of Marine Surveyor of the Port, read a paper to your Society, giving a full description of the Self-registering Tide Gauges, established by the Liverpool Dock Committee, at Hilbre Island and St. George's Pier-head. These have now been three years in operation, during which time experience has shown the necessity for some minor alterations in the details of their arrangements, which have been carried out under the direction of the Dock Surveyor, and the execution of which prevents my submitting to you an unbroken series of observations. The alterations at Hilbre Island have been the most extensive; and have been so recently completed as scarcely to afford time for a fair comparison of the results from the two stations, which, however, do not present any very material difference. It is probable that several years must elapse before data can be gathered on which to found accurate general conclusions; yet it may be interesting to glance at the more remarkable of the tidal phenomena already chronicled, confining ourselves at present, for the reasons assigned, to the records of the Liverpool gauge.

The diagrams laid upon the table exhibit the daily oscillations of the tidal wave above and below the well-known standard of the Old Dock Sill; while the daily record appended of the general direction and horizontal motion of the wind, and state of the barometer—these particulars being furnished by Mr. Hartnup, of the Liverpool Observatory—indicates the operation of atmospheric influences upon the tidal action. It will be seen that lapses in the series of observations have been endured at different seasons and for unequal periods in the several years treated of, which will account, to a certain extent, for apparent inequalities in the annual result; but, while slight inequalities may perhaps be anticipated, it will be found

that through the ever-changing aspect of tidal action, and atmospheric influence, each year producing some singular discrepancies, a constant mean exists, from which the annual variation will probably prove eventually to be almost inappreciable.

Our records extend, in the three years under discussion, to the number of tides, as follows—in 1854, 663; in 1855, 678; in 1856 to 651 tides. An annual course complete would comprise about 706 tides. Taking, then, the records of these tides, and the level of the Old Dock Sill for a point of comparison, we obtain the following means—

Year.	Mean of High Water above O.D.S.	Mean of Low Water below O.D.S.	Range of Tide.	Mean Level above O.D.S.
1854	15.424 feet	5.544 feet	20.968 feet	4.940 feet
1855	15.425 ,,	5.570 ,,	20.995 ,,	4.928 ,,
1856	15.515 ,,	5.449 ,,	20.964 ,,	5.033 ,,
Mean of means	15.455 ,,	5.521 ,,	20.976 ,,	4.967 ,,

Year.	Ordinary Spring Tides.			Neap Tides.		
	Mean of High Water above O.D.S.	Mean of Low Water below O.D.S.	Range.	Mean of High Water above O.D.S.	Mean of Low Water below O.D.S.	Range.
1854	18.985 feet	8.611 feet	27.596 feet	11.698 feet	1.394 feet	13.092 feet
1855	18.388 ,,	8.194 ,,	26.582 ,,	11.527 ,,	1.438 ,,	12.965 ,,
1856	18.503 ,,	8.166 ,,	26.669 ,,	11.641 ,,	1.315 ,,	12.956 ,,
Mean of means.	18.625 ,,	8.324 ,,	26.949 ,,	11.622 ,,	1.382 ,,	13.004 ,,

From the above, the mean level for ordinary spring tides, for the three years, is respectively, 5.187 feet, 5.097 feet, and 5.169 feet; and for neap tides, 5.152 feet, 5.945 feet, and 5.163 feet above the Old Dock Sill; giving as the mean of means 5.135.

The highest tidal level attained in each year occurred

in 1854—29th January, at 11-45 a.m., wind from W., and strong gale, 21 feet above O.D.S.;

in 1855—25th October, at 11-30 p.m., wind from W., and strong gale, 21 feet 9 inches;

in 1856—16th October, at 0-15 a.m., wind from W.N.W., and strong gale, 22 feet 11 inches;

and the lowest tidal level below the standard occurred

in 1854—8th Sept., at 6-45 a.m., wind Easterly and light, 10 ft. 8 in.
in 1855—20th Jan., at 7-45 p.m., wind do. moderate, 10 ft. 8 in.
in 1856—8th March, at 7-45 p.m., wind N.N.W. and light, 11 ft. 11 in.

giving the extreme range for each year—

1854.....31 feet 8 inches,
1855.....32 „ 5 „
1856.....34 „ 10 „

It will be observed that the highest tides by no means denote the greatest range of tide, since it appears as if on those occasions the extraordinary rise were due to a general elevation, from atmospheric or other causes, of the sea level over which the tidal wave traverses ; thus the greatest range of a tidal wave occurred in each year as follows—

In 1854, on the 28th of February, 30 feet 7 inches from low to high water of the same tide, the high water at 0-15 a.m. attaining the level of only 20 feet 2 inches above O.D.S.

In 1855, on the 25th of October, the range was 29 feet from low to high water of the same tide, the high water at 11 a.m. 19 feet 10 inches above O.D.S., this being the tide preceding that which in the evening of the same day attained the highest level of the year; but the general elevation of the sea level having prevented the ensuing low water from receding to its previous level, the p.m. tide, though rising nearly two feet higher, did not attain the range of the morning tide.

In 1856, on the 6th of April, the range was 32 feet 5 inches from low to high water of the same tide, the high water at 0-10 p.m. 22 feet 5 inches above O.D.S.

The lowest high water levels in each year were—

in 1854, on 15th October, at 5-30 a.m., 9 feet 3 inches above O.D.S.
in 1855, on 25th April, at 6-30 p.m., 10 „ 1 „ „
in 1856, on 15th March, at 6-15 a.m., 9 „ 6 „ „

and the least range of the tidal wave was in 1854, on 15th October, coinciding, in this instance, with the lowest high water level, from high to low water, 7 feet 9 inches ; in 1855, on the 27th March, from low to high water at 7-15 p.m., 8 feet 8 inches ; and in 1856, on the 8th October, at 5 a.m., from high to low water, 10 feet 2 inches.

In conclusion, it may be useful to see how far the registered results coincide with the calculated and predicted heights of tides, taking for this purpose those tides when high water occurs between 6 a.m. and 6 p.m., being those to which the calculation of Holden's Tables refer.

We have the actual height in excess of predicted height, in 1854, on 231 occasions; in 1855, on 244; and in 1856, on 264.

The height has been less than predicted, in 1854, on 112 occasions; in 1855, on 95; and in 1856, on 64.

And the actual and predicted heights have agreed, in 1854, on 22 occasions; in 1855, on 15; and in 1856, on 11.

The greatest differences between the registered and predicted heights occurred as follows:—

HEIGHT IN EXCESS OF PREDICTION.

Feb. 17th, 1854—2 feet 8 inches, wind W.N.W. strong gale.
March 3rd, 1855—2 ,, 11 ,, wind N.W. moderate gale.
Jan. 22nd, 1856—2 ,, 11 ,, wind Easterly, moderate.

HEIGHT LESS THAN PREDICTED.

April 1st, 1854—2 feet 6 inches, wind S.W. moderate.
Dec. 19th, 1855—2 ,, 9 ,, wind S.E. strong breeze.
July 22nd, 1856—1 ,, 6 ,, wind N.W. light breeze.

STATE OF BAROMETER.

	Max.	Min.
1854,	Oct. 12th, 30.587 inches.	Jan. 7th, 28.762 inches.
1855,	Jan. 12th, 30.669 ,,	Dec. 25th, 28.920 ,,
1856,	Nov. 24th, 30.936 ,,	Jan. 24th, 28.759 ,,

HORIZONTAL MOTION OF WIND.

	Max.	Min.
1854,	Feb. 18th, 1039 miles.	Feb. 12th, 89 miles in 24 hours.
1855,	Jan. 1st, 974 ,,	Jan. 11th, 77 ,, ,,
1856,	Nov. 24th, 879 ,,	Nov. 1st, 77 ,, ,,

THE CHARACTERS OF MACBETH AND RICHARD THE THIRD, ACCORDING TO SHAKSPEARE, COMPARED.

By James Stonehouse, Esq.

(Read 21st May, 1857.)

It is curious to observe, in analysing the *personæ* of Shakspeare's works, how skilfully he has moulded them into shape, and how remarkably he maintains, throughout each play, their respective individuality. In examining the characters of Macbeth and Richard III., we find this to be most strongly exemplified. He places before us two men achieving the goal of their desires by treachery, violence, and fraud, standing as it were on the very hill-top of crime; with dispositions singularly opposite, yet succeeding alike, and dying alike, sword in hand, in the moment of defeat. They are both soldiers, statesmen, and of royal blood. Richard, the incarnation of wrong doing, is bold, crafty, and unscrupulous. Macbeth is the personification of vacillancy, fear, and boastfulness. Richard is innately wicked, while Macbeth cannot be said to be naturally so. One perpetrates acts of violence, impelled by daring and dauntless ambition, while the other is dragged, or rather drifted into crime, by temptation too potent for a weak and pliant mind to withstand. Here we have two men striving for power, pursuing the same ensanguined path, strewing it with acts of perfidy and violence. Both put aside all that stand between them and the glittering goal of their culpable designs,

"A crown, that bright reward of ever daring minds;"

yet, how unlike in their respective idiosyncrasies.

Let us see, first, of what "perilous stuff" Macbeth is made. He seems conscious of his moral poverty, and want of resolution. He says of himself, when compassing the destruction of Macduff and his race, that there must be

"No boasting like a fool,
This deed I'll do before the purpose cool."

Lady Macbeth, who may be supposed to know her husband well, thus strikes the key note of his character—

> "Yet do I fear thy nature,
> It is too full o' the milk of human kindness
> To catch the nearest way. Thou wouldst be great;
> Art not without ambition; but without
> The illness should attend it. What thou wouldst highly
> That wouldst thou holily; wouldst not play false,
> And yet wouldst wrongly win."

Lady Macbeth taunts Macbeth with being "infirm of purpose," and he feels, himself, that he is wishful to mount the pinnacle of power, but needs sufficient resolution to tread the slippery rounds of the ladder that leads to it. He says,

> "I have no spur
> To prick the sides of my intent, but only
> Vaulting ambition which o'erleaps itself,
> And falls on the other side."

With the world generally Macbeth appears, in his early career, to have stood in good estimation, for he prides himself upon having "won golden opinions from all sorts of people." The wounded sergeant from the battle-field extols his bravery, while the good king Duncan styles him "our valiant cousin," and "noble Macbeth," calls him "a worthy gentleman," and praises him on all occasions, at the same time rewarding him for his faithful services. Macduff terms him "our gallant partner." These laudations of the man, it should be remembered, are all uttered previously to his first great crime, so that we may conclude that Macbeth, until it was committed, had shaken hands kindly with the fair world in all his doings.

Richard's character presents a widely different aspect. Richard says of himself, that he is "subtle, false, and treacherous," that he has "neither pity, love, nor fear," and that love "foreswore him in his mother's womb." But proud of his noble birth, he says—

> "I was born so high
> Our aiery buildeth in the cedars top
> And dallies with the wind and scorns the sun."

Conscious of his strong will and determination, he exclaims,

> "I'll climb betimes without remorse or dread."

His mother's description of his course of life from infancy presents a frightful picture. It is certainly deserving of remark that Shakspeare has assigned the task of exhibiting "the innermost man" of his two heroes to

two women near akin to them. He seems to have observed that women are good judges of character. The Duchess says to her son,

> "A grievous burthen was thy birth to me.
> Tetchy and wayward was thy infancy:
> Thy schooldays frightful, desperate, wild, and furious;
> Thy prime of manhood daring, bold, and venturous;
> Thy age confirm'd, proud, subtle, sly, and bloody."

King Henry in the Tower shrinks at Richard's approach with instinctive dread, for he exclaims on seeing him,

> "What scene of death hath Roscius now to act."

Richard rather boasts than appears ashamed of his aptitude for dissimulation, and says,

> "I can smile and murder—while I smile,
> And cry content to that which grieves my heart."

He has no credence in goodness, either in himself or others. Macbeth, on the contrary, estimates the high character of "the gracious Duncan," and assigns his virtues as a reason why he should not slay him. Towards the close of his career we see him desiderating a good name. In his regrets the "milk of human kindness" is found flowing.

> "I have lived long enough. My way of life
> Is fallen to the sear and yellow leaf;
> And that which should accompany old age,
> As honor, love, obedience, troops of friends,
> I must not look to have."

While Macbeth thus exhibits a consciousness of the excellence of doing rightly, and trembles while he acts wrongly, Richard appears to care little what he does, or what men think of him.

In the contrival and committal of the murder of Duncan the whole machinery of Macbeth's character is laid bare. He is always doubting as well as fearing the consequences of his acts. He listens with ready ear to the insidious proposals of his wife, yet reasons with himself as to the baseness of the suggested act of treachery. At one moment he declares,

> "We will proceed no further in this business,
> He hath honored me of late;"

while in a few minutes afterwards he arrives at another conclusion, worked up to a state of false excitement, by the upbraidings and sneers of his companion. We find him then stringing up his loosened nerves with a sort of artificial determination, for he exclaims,

> "I am settled, and bend up
> Each corporal agent to this terrible feat."

In committing the murder of Duncan how admirably is Macbeth's irresolute disposition displayed. Fears and doubts are tossing tumultuously within him. Previously to entering the chamber of his victim his agitation is extreme, while his exclamation, "if we should fail," shows how uncertain he is of success. He dreads the very ground he walks upon betraying him;

> "Thou sure and firm set earth,
> Hear not my steps, which way they walk, for fear
> Thy very stones do prate my whereabout."

The very fact of bringing away the daggers from the chamber proves how completely unnerved he was, and how "brainsickly of things" he must have been," when he thought he heard voices upbraiding him, and bidding him "sleep no more." Look again at his speedy remorse. The appearance of his "hangman's hands" appals him, while the blood is already wet upon them, and his frantic terror is exhibited at the very thought of revisiting the scene of horror.

> "I'll go no more,
> I am afraid to think what I have done;
> Look on 't again I dare not."

Now let us see how Richard feels and acts under circumstances which would be likely to try a man's nerves. He has no "compunctious visitings." He is equally insensible to every tender or generous emotion. Virtue in others Richard despises, meekness and gentleness he ridicules; while he appears to abnegate the existence of righteousness either in himself or others. Richard is no hypocrite. He is a rank dissembler. The hypocrite makes truth serve the purpose of falsehood. The dissembler is content with making falsehood serve his own particular purpose. Richard dissembles with the Lord Mayor and the city authorities. He dissembles when he refers to Scripture and Sacred things. He dissembles with Buckingham. He dissembles with Lady Ann. He dissembles when he pretends to weep on learning the news of king Edward's death.

> "Sorrow's the mode
> And every one at court must wear it now.
> With all my heart—I'll not be out of fashion."

Under similar circumstances Macbeth would have acted the hypocrite. He had neither the wit nor ability to dissemble. Macbeth sickens at the thought and sight of blood. Richard is indifferent whether he sheds it himself, or causes it to flow by the agency of others. Richard considers deeds of violence as necessary to his elevation. Macbeth trembles at the

very thought of them. Richard is energetic in all he does, Macbeth vacillates and procrastinates. Richard thinks and acts for himself, Macbeth is a mere machine, wound up and directed as it were by a daring, unscrupulous, and impetuous woman, and the apparently supernatural movers of his destiny.

Richard stabs young Edward, after the battle of Tewksbury, without one grain of remorse; he kills king Henry like a butcher, and jests on the occasion,

> "What! Will the aspiring blood of Lancaster
> Sink in the ground? I thought it would have mounted.
> See how my sword weeps for the poor king's death."

He contrives the murder of Clarence without hesitation. He woos and discards Lady Ann without one touch of feeling. He causes the death of the two young Princes in the Tower without a pang of remorse. His greeting of Clarence's murderers is quite hilarious, and contrasts singularly with Macbeth's irresoluuion in engaging a third ruffian to assist in the assassination of Banquo, for fear that those already employed should not prove sufficient. Richard says to the ruffians,

> "How now, my hearty stout resolved mates,
> Are you going to despatch this thing?
> I like you, lads,—about your business strait
> Go! Go! Despatch!"

Richard's reception of Tyrell after the murder of the Princes, shews how callous he is to all human sympathy.

> "Richard. Kind Tyrell, am I happy in thy news?
> "Tyrell. If to have done the thing you gave in charge
> Beget your happiness, be happy then,
> For it is done.
> "Richard. But didst thou see them dead?
> "Tyrell. I did, my lord.
> "Richard. And buried, gentle Tyrell?
> "Tyrell. The chaplain of the Tower hath buried them,
> But where, to say the truth, I do not know.
> "Richard. Come to me Tyrrell soon at after supper,
> When thou shalt tell the process of their death.
> Meantime but think how I may do thee good,
> And be inheritor of thy desire."

No obstacles stand in Richard's way, no difficulties daunt him, nor impede his onward march. Everything and person that oppose him he "removes" without one spark of remorse, regret, or hesitation; while Macbeth shudders at retrospection, trembles at the present, and is "full of saucy doubts and fears" for the future.

The murders Richard commits, it will be observed throughout, have an especial purpose; but Macbeth slaughters with a blind fury incited by his fears. As, for instance, in his wholesale butchery of Macduff's family, which could by no means advance his fortunes.

In the closing scenes of these two men's lives, we still see in what a masterly way Shakspeare works out their individuality. Although we find Richard somewhat flurried on learning that Richmond is on the seas expecting the aid of Buckingham, with an intention to land and dispute his right to the throne, yet we find him speedily resuming his presence of mind, acting with his accustomed promptness and energy; weighing his chances, making the disposition of his forces skilfully, and issuing his orders with precision. As the hour of conflict approaches, he attends to the general as well as particular details relating to the coming battle: and though the visions of the night have somewhat daunted him, he quickly shakes off all despondency, and is soon "himself again."

During the progress of Bosworth fight, Catesby declares that

> "The king enacts more wonders than a man.
> Daring and opposite to every danger,
> His horse is slain, and all on foot he fights,
> Seeking for Richmond in the throat of death."

Though the day goes against him, and he is urged to save himself by flight, he spurns the idea, declaring that "I have set my life upon a cast, and I will stand the hazard of the die." Richard abides by that cast, seeking Richmond everywhere in the thickest and hottest of the fight, till at length he encounters him. He meets him as a brave man should do his foe, and then, with courage radiant to the end, the last Plantagenet dies as unyieldingly and as sternly as he has lived.

Let us examine the incidents connected with the death of Macbeth, and his conduct previous to that event. As the time of his fate approaches, he is full of hurry and confusion, vaunting and despondency. Now leaning his slender faith upon the staff of the predictions of the phantoms raised by the wierd sisters; now boasting that he has "never sagg'd with doubt nor shook with fear," yet almost in the next breath confessing that he is "sick at heart." Now do we see how skilfully Shakspeare exhibits the flowing of the "milk of human kindness" in Macbeth's disposition. He proves that he sincerely loves his wife, for when he learns that she is sick, although encompassed by danger and the difficulties of his position,

he enquires of the physician, with a tenderness and pathos most touching—

> " Cans't thou not minister to a mind diseased,
> Pluck from the memory a rooted sorrow ;
> Raze out the written troubles of the brain,
> And with some sweet oblivious antidote
> Cleanse the stuff'd bosom of that perilous load
> Which weighs upon the heart."

Macbeth next exhibits the feebleness of his temper and irresolution in calling for his armour. Although told that " it is not needed yet," he orders it " to be put on," and bids the armorer " despatch ;" yet in the next breath petulantly commands him " to pull it off," and then directs that " it may be brought after him." Any energy he exhibits, is the energy of despair. His is an impelled courage, arising from the distracting state of his affairs, yet here again the milk of human kindness is discernible. He learns at this juncture that his wife is dead, and though he has but just shown some energy in ordering his captains " to hang out their banners," and boasts that " his castle will laugh a siege to scorn," his soul melts at the fatal news, and he utters the fine soliloquy commencing,

> " She should have died hereafter."

When Macbeth learns that Birnam Wood is moving he becomes panic stricken, and his belief in the predictions of the phantoms begins to waver ; he still keeps up some show of courage—yet see how his irresolution again manifests itself.

> " If this which he avouches does appear,
> There is no flying hence, nor tarrying here.
> I 'gin to be aweary of the sun,
> And wish the estate o' the world were now undone."

He then plucks up heart of grace, and with a despairing effort exclaims

> " Ring the alarm bell. Blow wind ! come wrack !
> At least we'll die with harness on our back."

Pressed on all sides, he declares himself like a bear "tied to a stake," but consoles himself with the recollection of the prophecy, that " none of woman born can harm Macbeth." His want of determination restrains him from falling " Roman-like on his sword." But how unlike to Richard is he at the last push of his career ? Richard, as we have seen, seeks Richmond everywhere ; Macbeth avoids Macduff throughout the day. When Macduff meets him, unlike Richard who courts instead of shuns the conflict, Macbeth stops to parley, and tells Macduff plainly that of " all men else I have avoided thee ;" and even when swords have been crossed he still clings to

the hope of escape by endeavouring to intimidate Macduff by announcing that he "bears a charmed life." Macduff's declaration of his being untimely ripped from his mother's womb drives Macbeth to despair, and he raves over the overwhelming announcement like one possessed. But Macduff still pressing the tyrant to the encounter commands him to yield as a coward—he must yield

"And live to be the show and gaze o' the time."

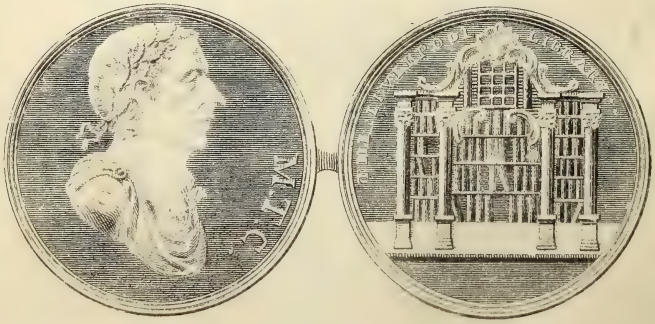
Macbeth then finding words of no avail, with a sort of frantic energy fights without skill or judgment, and meets at length the soldier's death which he did not merit.

Thus Shakspeare, from the first to the last in these two remarkable plays, works out the characters of his heroes with surprising skill. It should be recollected that while the poet exhibits the two monarchs as deeply steeped in crime, it is a great question whether he has been truthful in doing so. Of Richard's extreme culpability there have been doubts raised; while Macbeth, it has been asserted, was a man totally different from what we find him on the stage. In the case of Richard, Shakspeare depicted him the monster he seems to be, doubtless to gratify the prejudices of his royal mistress, whose Tudor blood ran adverse to that of York, and who entertained all the Lancastrian dislike to those who mustered under the standard of the pale rose. Shakspeare in this fully exemplifies his own assertion in Hamlet—

"That it were better to have a bad epitaph
Than the players' ill report."

LIVERPOOL LIBRARY.

(1)



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HISTORICAL SKETCH OF THE LIVERPOOL LIBRARY.

By P. Macintyre, Esq., M.D.

(Read 14th May, 1857.)

In the present year, 1857, when we look at Liverpool as the first mercantile port in the world, with her docks and her ships, her 400,000 inhabitants, her railways, her electric telegraphs, her penny newspapers, and her free libraries, it is with no small difficulty that we can go back a hundred years, and picture to ourselves the public and private condition of our great-grandfathers in "the good old town" in 1757. Even then, however, Liverpool was a thriving little seaport. Her population was only 24,000, but the number of her vessels of all sizes (and the largest of them was but small) had increased from 15, a century before, to 437. She possessed two wonderful docks—the Old dock, and the Salthouse dock—the safety and convenience of which were the admiration of all who saw them, and she participated largely in the profits of the slave trade.

In 1757 England was at war with France. Privateers were fitted out, in Liverpool and other ports, amidst great excitement. Travelling from place to place was very slow, and not very safe. Newspapers and periodical publications were few, and their intelligence scanty and long after date; consequently, the events of the war, and the important domestic events of the country, must have been only imperfectly known. We cannot but suppose that the enterprising inhabitants of Liverpool must have felt a deep interest in the victories and defeats of their countrymen by sea and land, as well as in such passing events as the court-martial and execution of Admiral Byng, and in the romantic and long delayed apprehension and condemnation of Eugene Aram, for the murder of Clark. This "pursuit of knowledge under difficulties" resulted in the establishment, in September, 1756, of "Williamson's Liverpool Advertiser," a weekly newspaper which—after an honourable career of one hundred years—died but the other day as "The Liverpool Times."

The foundation of one of our public institutions, the "Liverpool Library," took place also at this time. A few gentlemen had for a year or two, prior to 1757, been in the habit of meeting together for the purpose

of discussing literary subjects, and of reading a portion of the periodical publications of the day. They met from time to time at the house of Mr. William Everard, an eminent mathematician and a schoolmaster, who lived in St. Paul's square. The small collection of books brought out on these occasions was kept in a corner cupboard in Mr. Everard's parlour. It was in the year 1757, however, when—the books becoming more numerous, and requiring to be transferred from the cupboard to a large chest—that the idea of circulating them among the members of the club came to be entertained and acted upon.

"The success of this little society," says the preface to the last edition of the catalogue, "and the benefit derived from the circulation of the books, suggested the desirableness of extending the plan; and in the beginning of the year 1758, several of the principal merchants, professional men, and tradesmen of the town, including probably all the members of St. Paul's Square Club, 'with the view,' as their prospectus states, 'of furnishing an ample fund of amusement and improvement at the easiest expense,' formed themselves into a society for establishing a circulating library. The scheme was warmly taken up, and on the 1st of May, 1758, the Liverpool Library was founded. The contribution of each member, on joining the society, was one guinea, after which an annual subscription of five shillings was to be paid so long as he should choose to continue a member. The gentlemen of the Coffee-house Club (probably a club connected with the St. George's Coffee-house, in Castle street, at which the committee and general meetings of the Library assembled for many years), presented a collection of books, which was considered as *their* first subscription of a guinea each."

In this way, then, and from these beginnings, arose the Liverpool Library, which enjoys the proud distinction of being *the first circulating library*, not only in England, but in Europe. Some of its most important laws, notwithstanding that a century has elapsed since they were framed, remain, in principle, the same to this day; and this code of laws has frequently been made use of as a model for other institutions of a similar kind.

Shortly afterwards, but still during the year 1758, the first catalogue was published, and contained 450 volumes. It also contained a list of the proprietors, 109 in number, in which may be recognised many family

names still holding a high position in Liverpool.* This list of the original proprietors of the Library is not given here, as it was reprinted and introduced into the last catalogue, a copy of which, complete up to the present time, has just been presented to the Historic Society by the Library Committee.

Mr. Everard, who was now appointed librarian, removed from St. Paul's Square to Prince's Street, where he was to find a proper room for the books, and have a reasonable sum "for that and his trouble." They did not long remain here, however, for in 1759 they were again removed to a building in John street, belonging to Mr. Everard. The site of this building, on the west side of the street, about midway between Cook street and Dale street, is marked on the map of Liverpool, published by Perry, in 1769. The Library occupied the first floor, and was approached by a flight of steps, at the end of a lobby passing through the centre of the building. For this room "and his trouble," Mr. Everard received ten pounds a year.

The announcement in their original address, that "the collection of valuable books will be constantly enlarging, in proportion to the increase of the fund," continued to be fulfilled, so that in the year 1786 it had enlarged so much beyond the accommodation afforded to it by the room in John street, that a more spacious one, in a new building in Lord street, erected on the principle of a Tontine, was obtained, at a rent of eighteen pounds per annum.

By the numerous catalogues published during the one hundred years of the Library's existence—and copies of which are on the table for inspection—the progress of the Library can be seen. The 450 volumes in 1758 had increased in 1801 to 8,150; in 1830, to 21,400; in 1850, to 36,760; and in the present year the Library possesses 46,000 volumes. As the collection of books thus increased in value, so did the fund which provided them improve. The original payment of one guinea for a share in 1758, was raised in 1770 to a guinea and a half; in 1772, to two guineas; in 1777, to three guineas; and in 1784, to five guineas. The present price of a share is nine pounds ten shillings. The annual subscription, in like manner, increased by degrees. It began at five shillings,

* The first name on this list is that of William Goodwin; and out of the whole of them he is the only one styled "esquire," probably because he was the Mayor for that year.

and continued so for fourteen years; it was then raised to six shillings, at which it remained for twenty-two years; then it rose to ten shillings and sixpence, and continued at that for twenty-four years; then to fifteen shillings, lasting six years; and the last change in the annual subscription raised it to a guinea, at which it has remained now for thirty-three years.

A good deal of labour has been bestowed at different times, by proprietors of the Library, on the compilation and classification of the Catalogue. In July, 1801, the thanks of the Committee and a present of books, were given to Mr. Wilcocke, for his services in these respects; and in December, 1814, a copy of the Catalogue itself accompanied a similar vote of thanks to Mr. Wilckens. In 1830, and again in 1850, the reconstruction of the Catalogue was entrusted to a Sub-committee, each member of which was presented with a copy, beautifully bound, in grateful acknowledgement of his services.*

The *printing* of the Catalogue has always had a great deal of care bestowed upon it. That of 1801 was printed by Mr. John M'Creery, a gentleman well known in Liverpool as a printer, and as the friend of Roscoe. His beautiful editions of Roscoe's Works obtained great fame both for himself and for Liverpool, proving to the world that London itself could not surpass this town in some kinds of elegant typography. The catalogue of 1830, which is also a very fine specimen of printing, issued from the press of Mr. David Marples, whose name has long ranked high as a printer. The last catalogue, that of 1850, was printed by a member of this Society, Mr. Thomas Brakell; and gave such satisfaction to the sub-committee, that the proprietors, at a general meeting, unanimously passed a complimentary resolution to this effect, and directed that a bound copy be presented to him, with a copy of the resolution.

Mr. William Everard, the first librarian, continued so for twelve years. A gentleman of the name of Broderick succeeded him, and remained for two years, at the increased salary of fifteen pounds. Mr. George Barker was then appointed librarian, at twenty guineas per annum, and held the office for the long period of forty-six years. A handsome silver cup was presented to him, as a compliment after his faithful services for so many years. His portrait, painted by Williamson, and presented to the Library, still hangs

* As a member of these Sub-committees, the writer alone has the pleasure of possessing copies of the Catalogue, so presented, on both those occasions, with an interval of twenty years between them.

in the consulting library above stairs. On the retirement of Mr. Barker from declining health, Mr. Phœnix, the sub-librarian, was appointed, and filled the office till a short time before his death, having been attached to the Library thirty-nine years. Mr. Perris, the present librarian, had also been sub-librarian, and has now been in the Library, "man and boy," forty-two years. From these data it would appear that the duties of the office have not been very detrimental to life. These duties, however, have increased, and are every day increasing. The number of volumes taken out and returned averages 430 per day; and the system of book-keeping now in use requires great attention, and works exceedingly well.

In the catalogue of 1760, the fifteenth law provides—"That each subscriber shall have a medal, for which he must pay one shilling; and which must always be ready to be shown, if required, to the librarian, when a book is sent for, to prevent him being imposed upon by sham messages, or pretended servants." These medals * are relics of the olden time, and are now very rare, as they have not been in use for more than sixty years.

In all the subsequent catalogues, beginning with that of 1814, there may be seen on the title-page an engraving, from a beautiful design by John Gibson, the celebrated sculptor. It represents "Wisdom elevating the Soul." Gibson was then a young man of great promise in the profession in which he is now so eminent a master. (See plate viii.)

In the year 1800 a very important event in the history of the Library took place. It had been in existence for more than forty years, and the accumulation of the books again rendering more extensive premises necessary, it occurred to some of the proprietors, that a good opportunity was thus afforded for extending the Institution into one, which should combine with the Library, a News-room and Coffee-room in the same building. At the annual meeting of the members in May, 1800, a proposal was submitted, to raise funds, by subscription, for the erection of such a building. The proposal was approved of, successfully carried into effect, and resulted in the erection of the building so well known as the Lyceum.

* I have had the pleasure of presenting one of them to the Society this evening. On one side of it is represented a bookcase, with the words "The Liverpool Library" above it. On the other, in prominent relief, is the head of Cicero, with the initial letters M. T. C. This medal was exceedingly well engraved on the title-page of the Catalogue of 1801, long after the use of the medal itself had ceased. (See plate viii.)

To one part of this, the Library or Rotunda, expressly constructed for the purpose, the books were removed in 1803.

It is impossible, in such a paper as this, to give even a list of the names of all the eminent men, who have taken an active interest in the progress of the Liverpool Library, during its long career. Suffice it to say, that almost every mercantile or professional man, distinguished in literature or science in Liverpool, was among its members. The roll of its Presidents, during its first half century, contains, among many others who did it good service, the names of Roscoe, Dr. Currie, the Rev. John Yates, Mr. Rathbone, Dr. Worthington, Dr. Rutter, Dr. Lyon, Mr. Evans, (afterwards Sir W. David Evans and Recorder of Bombay,) Mr. Daulby, Dr. Carson, Archdeacon Brooks, and Mr. Fletcher Raincock. Not one of these now survives.

Out of the many who have presented their works to the Library, I may mention one who, in his day, was a prominent character in the town, though in a humble position. This was William Hutchinson, who for nearly forty years was dock-master in Liverpool. He presented to the Library a series of Observations on the tides, &c.*

These Observations are, I believe, of great value, and the Library has been applied to more than once, to allow them to be examined for scientific

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* These Observations are in manuscript, and contain the following subjects :—" On the moon's age—solar time of high water—heights of the tide in feet and inches—the tides' successive differences in minutes—the velocity of the winds calculated in miles per hour, after Smeaton—the state of the barometer at noon, and of Fahrenheit's thermometer at eight in the morning, and for the last two years at noon—the quantity of rain, and remarks on the weather, from the beginning of 1768, to August 10th, 1793, a period of twenty-five years, seven months, and ten days. Presented to the Liverpool Library, with the exception of eleven pages cut out to give to Mr. Richard Holden, to make out the 3000 observations mentioned in his preface to his Tide Table, by which he founded a theory from natural causes to agree therewith."

Speaking of these manuscripts, Mr. Hutchinson himself says, " At the request of my friend Mr. Ferguson, the astronomer, who with great labour and pains furnished me with large schemes, tables, plans, &c., relating to the tides : in the year 1764 I began and have continued observations on the time and height of the tides, flowing at the old dock-gates, about three miles from the mouth of the river, which is so broad, that as a branch of the sea, no land floods have any effect on the heights of the tides in the river opposite the town, where the least flow of water that I have observed in neap tides was nine feet at the dock-gates. I had a tide clock made, that was planned by Mr. Ferguson ; I kept the clock going as near as I could to solar time."

purposes. In the year 1833, Mr., now Sir J. W. Lubbock, Professor Whewell, and Mr. Dessiou, being a committee of the British Association for the Advancement of Science, were engaged in the investigation of the phenomena of the tides, and learning that the Liverpool Library possessed these MS. observations, they, after examining them, applied to the committee for the loan of them, to aid them in their discussion of the subject. For this purpose the Committee lent them to the Hydrographers' Office at the Admiralty, where they remained nearly three years; and the result, to which they contributed in no small degree, was a series of papers published in the Philosophical Transactions. They were afterwards required to be produced before a Committee of the House of Commons, on the question of the "Tidal standard" dispute between the River Dee Company and the Commissioners of the Admiralty; and the papers were examined with great interest by the members of the Parliamentary Committee.

Mr. Hutchinson died in 1800, after a life of much usefulness. He was a very ingenious man, and many of his inventions were turned to good account.*

The Committee of the Liverpool Library have done their work *con amore* from the earliest time up to the present. They have with great care, and according to their second law, "provided a fund of literary instruction and entertainment, adapted to the various tastes of the proprietors, among whom the books are to be circulated." An absence of selfishness, and a constant desire to promote the interests of the Library, kept up a harmonious feeling amongst them, and has characterised them to the present day.

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* It is stated by Mr. Brooke, in his very interesting work, "Liverpool during the last quarter of the 18th century," that "Mr. Hutchinson was accustomed to observe a particular day in each year, as one of strict devotion, in commemoration of his providential deliverance at one period of his life, when, after the loss of the vessel in which he sailed, he, and others of the crew of the vessel wrecked, being without food, had drawn lots to ascertain which of them should be put to death, in order to furnish a horrible and revolting meal to the survivors. The lot fell upon Mr. Hutchinson, but he and his fellow-sufferers were providentially saved by another vessel which hove in sight."

Mr. Brooke says that Mr. Hutchinson was appointed dock-master in 1760, but this must be a mistake, as I find in 'Williamson's Liverpool Advertiser,' of the date 11th May, 1759, that Robert Murphy, a joiner in the privateer New Anson, had attempted to shoot him. He is there described as "dock-master."

During the latter part of the last century, the meetings of the Committee of the Library were of a more social character than of late years. They took place principally at the Star and Garter Hotel in Paradise Street, and as the members met in the evening, nothing was more natural than that they should combine pleasure with duty. Meeting at seven o'clock for despatch of business, conversation and supper followed. These meetings became in some degree celebrated. When men of letters or science visited the town, members of the Committee were privileged to introduce them, and discussions of much interest often took place. The Committee meetings of the Library, under the presidency of Roscoe, Currie, Rathbone, and others, came to be considered the most intellectual and agreeable ever held in Liverpool.*

In the year 1774 the President of the Library was allowed to nominate a Lady-patroness for his year of office. She was presented with a catalogue handsomely bound, and had for the time, all the privileges of a proprietor. This appointment continued for 54 years, until the presidency of my late esteemed friend David Stewart Wylie; who upon his appointment in 1828 declined to nominate a Lady-patroness; and all his successors have been ungallant enough to follow his example. I may remark here, that from the commencement of the Library, it has had many ladies among its proprietors. One of these, the late Miss Twentyman, of Duke Street, whose name appears in several of the old catalogues, and whose death took place a few months ago, had been a proprietor in the Library for 78 years.

The proprietors of the Library have always shown the greatest readiness in giving access to all their books, to authors or others, not proprietors,

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* On the 13th of August, 1799, a rather amusing resolution was passed. The entry in the Committee Book is as follows:—"This day for the first time the Committee met at four o'clock in the afternoon, and having transacted the necessary business of the Library, they dined together at five o'clock, and spent the day with harmonious pleasantry. Resolved unanimously, that the monthly Committee meet henceforward on the second Tuesday in the month, at three o'clock, and that they afterwards dine together; that dinner be on the table at four o'clock *precisely*, and that the bill be called at six o'clock, when such gentlemen as chuse may depart, and such as chuse may club again; that red port be the only wine allowed, and that if any gentleman prefer white wine, he pay for it, distinct from his share of the general shot; and that all the wine be brought up in the original bottles from the binn, and decanted in the Club-room."

who might wish to consult them. Also, for many years past, by a special regulation, any proprietor, engaged in any literary or scientific investigation, has been permitted to have the use, at his own house, of a greater number of works, than the number generally allowed. This privilege has been much used, and highly esteemed; and by none, I believe, more than by our own hon. secretary, the Rev. Dr. Hume. The late Dr. Lingard used to say, "I owe a debt of gratitude to the Liverpool Library, for affording me many facilities when writing my History of England, and without those it would have cost me many journeys to London." Many works now in the Library have been presented to it by their authors, in acknowledgement of such benefits conferred on them in this way. This liberality, however, on the part of the Library has been sometimes abused, and valuable books have occasionally been lost. Among these were a very fine copy of Boccaccio, and one of "Higden's Polychronicon." The latter work was in black letter, printed by Caxton, 1495, and was often referred to by book collectors. It must have been of great value, as I understand that an imperfect copy was sold for £150, at the sale of the late Sir Mark Sykes. Every exertion was made to recover the book, but without effect.

The Library has also been liberal in making donations of its surplus copies of books to our local institutions, such as the Blue Coat School, the Northern and Southern Hospitals, the Sailors' Home, &c. The Free Public Library too, now so rich and so vigorous, received its *first* donation of books, amounting to more than 2000 volumes, from the Liverpool Library.

Lectures on scientific subjects, by distinguished individuals, have been frequently delivered in the lecture room of the Library. Among the names I have observed those of Garnet, Murray, Spurzheim, Webster, Dalton, Banks, Thelwall, Pemberton, Traill, and others.

In concluding this sketch of the history of this Library, during the hundred years of its existence, I may remark, that if that noble Institution, the Free Public Library and Museum, whose foundation-stone was laid the other day, with so glorious a beginning, but advance during the next hundred years in an equal ratio to the progress of the Liverpool Library, from *its*

humble origin, we may well be content. The first Address or Prospectus of the Library was issued in 1758 :—

> "As many kinds of useful and polite *knowledge* can no otherwise be acquired than by READING; an attempt to furnish the public with an ample fund of amusement and improvement of this kind, at the easiest Expense, can hardly fail of general Approbation.
>
> "To answer this valuable purpose, the establishment of a LIBRARY in Liverpool, has often been wished for; and to gratify so laudable a Desire, a Scheme has been proposed, & is now carrying into Execution. The terms are moderate; and the prospect of Advantage is obvious and extensive; so that those Gentlemen and Ladies who wish to promote the *Advancement of Knowledge* will here have an opportunity of doing much good, by adding their assistance to that which the Scheme has already received.
>
> "A Collection of valuable Books, chiefly in the English language, is now purchased, agreeable to the annexed CATALOGUE; which will be constantly enlarging in proportion to the Increase of the Fund, and the generous *Benefactions* of those who think the Design worthy of their Attention."

The above illustrates the remark that there is "nothing new under the sun." It shows that what is felt, and spoken, and acted upon in the present day; that what inspires the munificent kindliness of a William Brown,—the desire to "furnish the public with an ample fund of amusement and improvement at the easiest expense"—had entered into the minds of a few kindred spirits in the town of Liverpool, when its streets were narrow, and its means were small. Although they kept their books for a time in a corner cupboard in Mr. Everard's parlour, yet we see that they were right in anticipating "the prospect of advantage" by the founding of this library. When we look at the progress it has made, and the benefits known and unknown that it has conferred, we can afford, even in the midst of our Free Libraries and Museums, to give honour to the men of a former day, for beginning so good a work, and in a spirit so pure and unselfish.

REMARKS ON ANTIQUE IVORY CARVINGS.

By Francis Pulszky, F.H.A.

(Read 23rd April, 1857.)

The facility with which ivory is carved, the polish it easily receives, and the mellow tone of its colour, recommended this material for sculpture from the earliest time of human civilisation. Already in Pharaonic Egypt, in ancient Assyria, in the earliest epochs of Etruscan, Greek, and Roman history, it was employed for ornamental purposes. The difficulties besetting, in ancient times, the communication with India and Inner Africa, whence ivory was brought, enhanced its value far beyond its present price; though the ancients knew of one other source of supply, now fully exhausted, viz., Northern Africa. The country between the Mediterranean and the Sahara was still, in the times of the Phœnicians and Romans, the dwelling-place of elephants. Hannibal had them tamed for the purposes of war; the Roman Consuls and Emperors transferred them to Rome, to be slain at the games of the Circus, or to carry the triumphal cars of victorious chiefs to the Capitol. The continuous drain exhausted, at last, the stock of elephants and their tusks in Northern Africa. No ivory comes now from the regions bordering the Mediterranean. Central Africa proved a more plentiful source, which, from times immemorial down to the sixteenth century, supplied Europe, by way of Egypt, with elephant tusks. In Egypt we see the elephant as a hieroglyphical character, on tablets anterior to the invasion of the Hyksos, therefore anterior to the Egyptian bondage of the Hebrews. The town of Abydos, (which means ivory city, since Abu is the name of elephant and ivory, in the language of ancient Egypt,) and the isle of Elephantinae,* both in Upper Egypt, received their names from the ivory, which was the staple article of their trade; and on the triumphal reliefs of the Ramessides we see regularly, among the tribute bearers, several negroes carrying tusks of elephants. Still,

* The name of the island, *Philæ*, may likewise come from the word, *Fil*, an Elephant, in Arabic.

antique Egyptian carvings in ivory are rare. The dryness of the climate—to which we are indebted for the preservation of such perishable materials as wood, and the colours of the reliefs—proves destructive to ivory ; for as soon as the animal glue which gives it consistency evaporates, it cracks, and crumbles to pieces.

Assyria and Persia were supplied with ivory from India and Bactria. The bearers of elephant tusks are never wanting in the triumphal processions of the eastern conquerors: we see them on the black marble obelisk of the Assyrian king Divanabar, in the British museum, and on the reliefs of the ruined palaces of Darius and Xerxes, in Persepolis.

The sculptors of Greece derived their ivory both from India and Africa; though it seems that the African, with its yellow tint and more agreeable sheen, was more frequently employed than the white Indian ivory, of chalky appearance ; so much the more as the commerce to the East was often hampered by Persian wars, whilst Egypt exported the products of Africa without interruption.

In Greece, not only was ivory used for ornamental purposes, as in Egypt and Assyria, but statues of large dimensions were built up from this precious material, which likewise served for the insignia of royalty and priesthood, and, together with the purple, remained the symbol of princely power and sacerdotal honour through all the epochs of antiquity. By joining smaller bits of ivory, in a manner not yet sufficiently explained, even after the learned researches of Quatremère de Quincy, the Greeks carved colossal statues of this material, adorning them with enammelled gold—the only metal believed to be worthy of being joined to ivory. Some of the Chryselephantine statues became celebrated as wonders of the world, both for their precious material and the eminence of the workmanship. The Olympian Jupiter of Phydias, at Elis—his Minerva at Athens—and the Juno of Polycletus, at Argos—remained unsurpassed for beauty and magnificence. The great French archæologist and patron of art, the Duc de Luynes, had lately made a copy of the Minerva of Phidias, according to the description of the ancient authors, and its representations on medals vases and gems. His Chryselephantine statue was one of the most interesting objects of the great French exhibition of fine arts, and gave some idea of the magnificence and costliness of this kind of sculpture.*

* The statue cost the Duke 300,000 francs.

At the time when the conquests of Rome extended to the Sahara, to the upper cataracts of the Nile, and the course of the Euphrates, the facilities of communication throughout the empire supplied the mistress of the world with a great amount of ivory. It grew more common; it was lavished on the furniture of the houses of the rich to such extent, that Horace, to show that he is not rich, says, that neither ivory, nor a ceiling of gold, glitters in his house. Its principal use was for book covers (libri elephantini : see Vopisci Tac. 8, et pugillares membranacei operculis eburneis); and such was the profusion of ivory, under the later Emperors, that the poet Claudian, probably unacquainted with the fact that female elephants have no tusks, describes the great pachyderms of India roving through the woods without tusks, which, he believed, were extracted from their mouths, in order to supply the display of ivory at Rome. He did not surmise that a time should come when one single commercial house at Sheffield would yearly convert a greater number of elephant tusks into unpretending handles of knives and razors, than imperial Rome could import during a score of years.

When the rise of the Mohammedan powers interrupted once more the communication with India and inner Africa, ivory became again scarce and expensive. It was used for ornamenting the covers of sacred books, for portative altars and vessels of the Church, for the handles of croziers, sceptres, and swords, for the frames of mirrors, for marriage boxes and chess-pieces; but on account of the costliness of the material, all these sculptures were reserved for the use of the highest classes of society.

As to the ivory remains of classical antiquity, they are of excessive rarity. One only sceptre has been preserved to our days;* stiles for writing are more numerous; so are ornamented hair pins, toys, dice, scent-boxes. Admission-tickets to the theatres and amphitheatres have likewise survived the great catastrophies of history; and with them a few reliefs, amongst which the most important are the "Diptycha." We designate by this name large double ivory tablets, ornamented with reliefs on the outside, whilst the inside was covered with wax, on which the ancients used to write with metallic or ivory stiles. Diptychon means, originally, anything doubly folded; and therefore St. Augustine calls the oysters Dypticha; but the term was principally applied to ivory book-covers, or tablets for writing.

* It is published in Professor Gerhard's Centurien, T. lxxxvii. 5, 6.

The most interesting of these tablets were the Consular Diptycha, because we are able to assign a certain date to them; and as they were manufactured for the highest functionaries of the State, and presented to the Senators, we may presume that they are the best specimens of the art of the time, and therefore highly valuable documents for the history of art. They serve likewise to elucidate some dark points of Byzantine history; and afford most valuable information on the manners and customs of a period about which but scanty information can be gathered from contemporaneous authors, whose attention was principally directed to the development of the Christian dogmas, and who neglected political history, so far as it remained unconnected with the Church. Accordingly those ivories, which were always highly prized from the time of their manufacture up to our days, and remained the ornaments of the treasuries of churches and monasteries, attracted the attention of scholars immediately after the revival of letters. The Jesuit Wiltheim, Du Cange, and Banduri, the Byzantine historians,—the celebrated Hagenbuch,—the Benedictine Montfaucon,—the learned Florentine Senator Buonarotti,—the Prior Gori,—Professor Saxe,—Father Allegranza,—Bianconi,—Carroni,—Millin, the French Archæologist,—and Forsterman, the German,—published many of them, illustrating them by elaborate commentaries, and paving the way for a comprehensive view of the entire subject of antique Diptycha.

The ancient Romans did not like abstractions. Even in their chronology, the designation of years by figures, the era of the foundation of Rome, could not become popular; they preferred to call the year by the names of their annually elected chief magistrates, the Consuls, and to mention two names instead of a figure whenever they had to give a date, because the names reminded them instantly of the events of the year in question, which were mostly connected with the Consuls. Thus, for instance, instead of saying, In the year 690 of Rome, they said, Under the consulship of M. Tullius Cicero and C. Antonius. This custom implied a thorough knowledge of Roman history, and shows at once, why so much importance was attached to the register of the Consuls, the so called Fasti Consulares, increasing every year in bulk by two names. Roman chronology was, therefore, an epitome of Roman history to be mastered by everybody who took an active part in public affairs, that is to say, by all the citizens of Rome, as long as the Republic existed. When Julius Cæsar applied his genius to selfish aims, and to the violent destruction of the established

constitution of his country, by founding his monarchy upon the support of a standing army, more attached to his person than to Rome, and upon the favour of the lowest classes of the capital, he still had not the boldness to alter the forms of the Republic. His crafty successor, Augustus, developed upon principle what his grand uncle had by necessity left standing. The consuls remained, therefore, nominally the first magistrates of the empire, and continued to give the name to the year; and even when Constantine transferred the seat of the empire to Byzantium, and transformed it into a Christian state, the office and dignity of the Consuls was not discontinued. When Theodosius finally divided the Roman world into two independent states, it became even still more important, the Consuls being the last link of union between the two empires, and the symbol of their original union. One of them was always nominated at Rome, the other at Constantinople, and their joint names continued to designate the years, in the east as well as in the west, in preference to the reckoning by the years of Rome, and to the new-fangled era of the Emperor Diocletian, which survived him, under the name of the Era of the Martyrs, only amongst those whom he had persecuted—the Christians. The bulk of the people discarded alike the official era of the years of Rome and that of Diocletian, and continued to call the years by the names of the Consuls, though those chief magistrates no longer wielded any political power, and had but two tasks to perform—to give a name to the year, and to signalise their accession to office by magnificent games and feasts for all the people, and by gorgeous presents to the senators of the empire.

The most honorific of those presents were the Consular Diptycha,—sculptured ivory tablets covering the Fasti Consulares, or the register of the Consuls, from L. Junius Brutus down to the year of the donor, who was represented on the outside of the book-covers, clad in his consular costume, mostly sitting on the consular chair, and invested with all the insignia of his high office. His name and title, sometimes his signet, or the busts of the reigning Emperor and Empress, are seen on the top of the Diptychon. At the bottom, the largess of the new Consul is recorded by the representation of games in the Circus, and by the exhibition of the presents, which include money, palm branches as symbols of the prizes of the races and games, cakes for the people, and Diptycha for the grandees. It is by the inscription of the ivory tablets themselves that we know their destination—"To be presented to the Senators." One of them contains

some Greek Iambic verses, saying, "I, the Consul Philoxenus, offer these gifts to the wise Senate." Another Consul, Petrus, had an elegant Latin distichon engraved on his tablet, saying, in a similar way, "I, the Consul, offer these presents, though small in value, still ample in honours, to my senatorial fathers" And such, indeed, was the honour of ivory diptycha, that, by a decree of the Emperor Theodosius, nobody but the ordinary Consuls (to the exclusion of Consuls elect and Consuls by substitution, or Consuls honorary, and of all other officials,) were allowed to make presents of ivory book-covers; and the records we have of the inauguration of the Consuls mention always the presentation of the Diptycha, or Fasti Consulares.

From the remaining monuments of this class we see that their size, the material of which they were manufactured, the style of art and the representations carved on them, varied according to the rank of those for whom they were destined. Some of the Consular diptycha are of superior workmanship and choice ivory, others only of bone, and indifferently carved. On some we see the whole-length figure of the Consul, on others his bust, or even only his name. And all those differences relate to the receiver, not to the donor of the gifts, since we possess diptycha of the same Consul in bone and in ivory, some eminently, others rudely carved; again, some showing all the pomp and paraphernalia of Consulship, others plain and little adorned. Many of the Consular tablets, extant in the different museums and church treasuries of Europe, contain the full name and title of the Consul whose inauguration they record; some others are not inscribed, but the representation gives us a clue to the donor of the tablets; a few are anonymous, and cannot be traced to any certain date.

[Independent of Anonymous Consular Diptycha, and those which are Sacred or Mythological in their character, the following Inscribed Consular Diptycha were treated of.]

1. A.D. 248. M. Julius Philippus Augustus, and M. Julius M. F. Philippus, the younger, two leaves; one in the Fejérváry Collection—the other, formerly with Cardinal Quirini.
2. A.D. 308. M. Aurelius Romulus Cæsar, one leaf; formerly in the Gherardesca Collection.
3. A.D. 428. Flavius Felix, two leaves; one in the Imperial Library at Paris.
4. A.D. 430. Flavius Theodosius Junior Augustus, and Flavius Placidius Valentinianus Augustus, two leaves; at Monza.

5. A.D. 434. Flavius Areobindus, two leaves; at Milan, in the Trivulzi Collection.
6. A.D. 449. Flavius Asturius, two leaves.
7. A.D. 454. Flavius Aëtius, two leaves; at Halberstadt.
8. A.D. 487. Narius Manlius Boethius, two leaves; formerly with Cardinal Quirini.
9. A.D. 506. Flavius Dagalaiphus Areobindus, five leaves; two at Lucca.
10. A.D. 513. Flavius Taurus Clementinus, two leaves; in the Fejérváry Collection.
11. A.D. 516. Flavius Petrus Sabbatius Justinianus, three leaves; two in the Trivulzi Collection, one in the Imperial Library at Paris.
12. A.D. 517. Flavius Paulus Probus Pompeius Anastasius, five leaves; two at Paris, two at Berlin, one at Verona.
13. A.D. 518. Flavius Anastasius Paulus Probus Magnus, three leaves; two at Paris, one in the Fejérváry Collection.
14. A.D. 519. Flavius Anicius Justinus Augustus, one leaf; at Vienna.
15. A.D. 525. Flavius Theodorus Philoxenus, three leaves; two at Paris, one in the Fejérváry Collection.
16. A.D. 528. Flavius Anicius Justinianus Augustus, one leaf.
17. A.D. 530. Rufinus Orestes, two leaves; in the Soltykoff Collection at Paris.
18. A.D. 541. Anicius Basilius, two leaves; one at Florence, in the Collection of Antiquities.

[The Fejérváry Ivories now in the possession of Joseph Mayer, Esq., F.S.A., were described under nineteen historical divisions, extending from the time of the ancient Egyptian empire to the eighteenth century; and under three geographical divisions referring to Persia, India and China respectively. It may suffice to give the detailed account of two only.]

The first is the mythological Dyptychon of Aesculapius and Hygeia—the most beautiful of all the ancient reliefs in ivory. In the last century, it belonged to the treasures of the Florentine Museum of the Gaddi family; later to Count Michel Wiczay, at Hédervár, in Hungary. It has been published by Gori, by the learned Barnabite, Felix Caronni, and by the celebrated engraver, Raphael Morghen. (See illustration.)

On the right leaf of the Dyptychon, Aesculapius is represented standing on an ornamented pedestal, leaning with his thoughtful head on his right hand, which holds a scroll. The left hand is placed on his hip; a club, with a huge serpent coiling around it, and resting upon the head

of a bull, supports the figure, which is clad in the manner of Jupiter, the drapery covering only the lower part of the body. The god has a fillet (diadema) in his hair, and elegant sandals on his feet; his diminutive genius Telesphorus, the god of convalesence, clad in a cowl, stands close to him in the act of opening a volume. The group is placed between two pilasters, joined by a garland of oak leaves. One of them supports a casket of flowers on its Corinthian capital; the other has been, at some distant time, broken off.

On the left tablet Hygeia, with a chaplet (stephane) in her hair, leans against a tripod, round which coils a huge serpent, raising its head to the right hand of the goddess, who offers him an almond-shaped fruit, or cake. At the feet of the goddess of health, we see Cupid, sufficiently characterised by the quiver and bow, although he has no wings. On the top of one of the Corinthian pilasters there are the sacrificial vessels, the prochûs and the phiala,—the jug and cup for libations; on the other capital, the Bacchic child Iacchus opens a wicker basket (cista mystica) from which a snake is creeping out. On both the tablets, a label surmounts the representations, which contained the dedicatory inscriptions, but no trace of them can now be discovered; they were probably written in colours. A rich border of acanthus leaves and flowers, forms the frame of the beautiful reliefs.

The graceful arrangement of the drapery, and the masterly composition of both tablets, which is in contrast to some little inaccuracies of the execution—(thus, for instance, the left foot of Aesculapius is too much turned outwards; the "scurzo" of the thigh of Eros is incorrect; the face of the goddess less expressive than that of Aesculapius) —seems to warrant the supposition, that both reliefs are copies of some celebrated marble statues. This conjecture might likewise explain the uncommon size of the club, and of the snakes which, in the original marble groups, might have formed the artistical supports of the statues. Still, it is impossible even to guess to which temple the originals of the composition might have belonged, since the worship of the gods of health was diffused all over the ancient Græco-Roman world. Carronni, in his commentary on our Diptychon, enumerates no fewer than one hundred and ninety-eight Greek towns which, according to the ancient authors, worshipped Aesculapius and his family in temples erected to their honour,

or made their representations the types of coins. But in any case, the present composition is the most important monument of the worship of the gods of health among all we know, on account of the many attributes heaped on them. The club, resting on the head of a bull, is the symbol of Hercules, as representative of the sun; the tripod belongs to Apollo, the stephane to Juno; Cupid is the companion of Venus, and Iacchus of Ceres. In our relief, they are all connected with Aesculapius; and especially with his daughter, who is raised by them to the dignity of a great mother-goddess. This peculiarity, entirely in accordance with the workmanship of the carving, carries us down to the time of the Antonines—an epoch most important in the history of the development of religious ideas. The faith in Greek and Roman mythology had come to a crisis; and though Christianity was not yet powerful enough to threaten the religion of the state with extinction, still people began to feel that the old faith had accomplished its destinies. Worn out as it was, it could no longer bestow support to the state; on the contrary, it had to be supported by the secular power. It was in vain that the Emperors strove to impart new life to the state religion by frequent pomps and feasts, comemorating antiquated rites and customs. The priests brought, in vain, old, forgotten, and miraculous statues from the hidden recesses of the temples before the multitude, and disclosed the mysteries of worship to the uninitiated crowd. A feeling of uneasiness had caught hold of Roman society; and mythology took its course backwards to the point from which it had proceeded. Starting from the unity and ubiquity of godhead, its manifold manifestations were originally embodied in innumerable personifications; the youthful poetical spirit of Greece found always new characteristic symbols; and as godhead manifests itself in space and time, in nature and history, new myths grew up, symbolical of those manifestations, and formed in their concatenation that lasting monument of the youth and poetical productivity of the Hellenic race, which we possess in its mythology. But life soon departed from the myths when they were transferred to Rome, since the practical Romans adopted only the form, and were unable to understand and to feel the spirit, of Hellenic religion. Its poetry faded; and the rites, deprived of their symbolic meaning, debased and over-clouded the understanding by dark superstition. Accordingly, towards the end of the Republic, and under the first Emperors, the people of Rome turned easily to the still

more superstitious and immoral rites of oriental and barbarous mythology, to the bloody mysteries of Mythras, to the orgiastic processions of Cybele, to the dissolute worship of the Syrian gods, and to the Isiac ceremonies, of which the original meaning had been forgotten. Philosophical minds of an imaginative turn, the Neoplatonists, tried now to give a new basis to the old mythology; they sought to re-establish unity out of diversity; any local god became the symbol of godhead and of the creative power, and every goddess represented nature, and became the impersonation of the female principal of creation. On monuments of this period, therefore, we cannot be astonished to see the local goddess of Epidaurus and Pergamus assimilated to Venus, to Juno, and to Ceres, and leaning upon the tripod of Apollo. The beautiful pantheistic representation is sufficiently explained by the following remarkable invocation of Isis, in the Metamorphoses of Apuleius, which shows the desire of converting the popular polytheism into philosophical monotheism.

"*Queen of heaven*," says he, "whether thou art Ceres, the beautiful, the first mother of crops; or the heavenly Venus, who in the beginning harmonised the difference of sexes by love, her offspring; or the sister of Phoebus, who, assisting travail, hast reared so many nations; or, with nocturnal wailing, the terrible Proserpine (Hecate), with her three-fold face, restraining the assaults of ghosts, and keeper of the recesses of the earth, with thy female light purifying all the walls, with damp fire nourishing the joyous seeds, and on the by-ways of the sun distributing thy uncertain light; by whatever name, by whatever rite, under whatever form, it is permitted to call thee!" &c.—And Isis replies: "Here I am, Nature, the great mother of all things; the mistress of all the elements; the first progeny of time; the sum total of names; the Queen of the deceased; the first of the heavenly host; the all-comprehensive form of gods and goddesses, ruling with my will the bright summits of heaven, the salubrious breezes of the sea, the mournful silence of the nether world,—whose godhead, which is one, is worshipped by all the world, under different forms, with various rites, aud under manifold names. The first-born Phrygians call me *the Pessinuntian mother of gods;* here the aboriginal Athenians *the Cecropian Minerva*; there the floating Cyprians *the Paphian Venus;* the archers of Crete *Dictynna;* the trilingual Sicilians *the Stygian Proserpina;* the Eleusinians *the old goddess Ceres.* Others call me Juno,

others Bellona, others Hecate, and others Rhamnusia (*Nemesis*); but the Aethiopians, who are illuminated by the first rays of the nascent sun, and the Arians, and the Egyptians, versed in ancient lore, and worshipping me altogether with peculiar ceremonies, call me by my true name, Queen Isis."

But besides this Neoplatonic explanation of the attributes cumulated upon Hygeia, and characterising the epoch of the Antonini, we find likewise some older relationship between the goddess of health and the Deities, whose symbols she usurps on our relief. The tripod of Apollo—the healing solar god—perfectly suits his granddaughter, the goddess of health. As to Cupid, he is not the god of earthly love when in company with Hygeia—but Cupid, the god of death, who carries the souls back to their original abodes. We see him in this character often on gems—sailing to the isles of the blessed upon the vase which contains the ashes of the deceased—or burning the butterfly, the symbol of soul, with his torch, to represent its purification by death. Iacchus, with the mystic basket, has the same signification; he is the mediator of earthly and heavenly ideal. The union of those gods of immortality is not altogether confined to our relief. Pausanias mentions, in the Rotunda (*Tholus*) of Aesculapius, at Epidaurus, the picture of Cupid, and of Methe, the goddess both of drunkenness and immortality; therefore, a combination analogous to our representation. Iacchus, the boy with the snake, reminds us likewise of the parallelism of Hygieia, and Kora, and Demeter; and we find, at Lebedea, the worship of Proserpine Herkyna joined to Trophonius—a group similar in form to Hygeia and Asklepios. On the coins of Parium, Demeter is represented with a snake coiling round her body: and a dolphin—symbol of Cupid—at her feet. We find the snake again in company with Minerva, who is likewise called Medical and Salutaris, being a goddess of health; and with her we see the mystical casket, hiding Erichthonius, a snake boy. As regards Juno, whose stephane adorns the head of Hygeia on our tablet, a sacred snake is worshipped in her temple at Lanuvium, fed by virgins.

Though it cannot be doubted, from the preceding instances, that a connexion of the Epidaurian goddess with all those deities, whose symbols are given to her in our Diptych, was known through all periods of Greek mythology, still the simultaneous union of so many attributes belongs exclusively to that period when Neoplatonism tried to steal the thunder of Christianity, transforming polytheism into monotheistic philosophy, and

explaining the countless myths in a rational way. Though these endeavours did not succeed, still they deeply impressed the mind of the educated classes, and prepared the ultimate triumph of Christianity. We find in every Museum many pantheistic idols, upon which the attributes of several gods are heaped; they are evidences of the influence of Neoplatonism on art; but the most important, and by far the most beautiful, monuments of this period are the ivory tablets which we have tried to explain.

The second Ivory is of the Byzantine period, a Consular Diptychon of Flavius Clementinus, Consul A.D. 513, published first by its proprietor, Gustavus Philippus Negelinus, then by Gori, Vol. I., Tab. ix. x.; and again, by D'Agincourt, Storia dell Arte, Vol. II., pl. xii. fig. 7, 8. The inside of the Diptychon is not less interesting than the reliefs, for an important inscription, which contains the Greek liturgy of the eighth century, runs across both tablets, with the following incorrect orthography. See the fac-simile on the opposite page.

The precise date of this inscription is sufficiently fixed by the mention of the first year of Hadrian, Patriarch of the city, who cannot be any but the Roman Patriarch, or Pope Hadrian I., since among all the Patriarchs of Constantinople, Alexandria, Antiochia, and Jerusalem, there occurs no Hadrian; and the word πολις (city), without any further designation, was applied only to the two great metropoles—Rome and Constantinople. The first year of Pope Hadrian's office commenced with the 9th of February, A.D. 772. It was therefore in that year that the Diptychon of Consul Clementinus was inscribed with the liturgy and short prayer for the Patriarch, for the priest John, and for Andrew Machera, probably the donor of the tablets to some church of Sicily, where the Greek language prevailed at that time, though the Sicilians were attached to the Roman Patriarch. The mention of St. Agatha, the patron saint of Palermo, points likewise to Sicily.

We are not to be astonished at seeing the memorial of a Consular inauguration inscribed with a Christian prayer; since Alcuinus, speaking of the Mass, de Divin. Offic., makes the following mention of Diptychs: "After those words, when it is said, '*in the sleep of peace*,' it was the custom of the ancients, as it is done until now in the Roman Church, to recite the names of the deceased *from the Diptychs*."

ÆSCULAPIUS AND HYGIEIA,

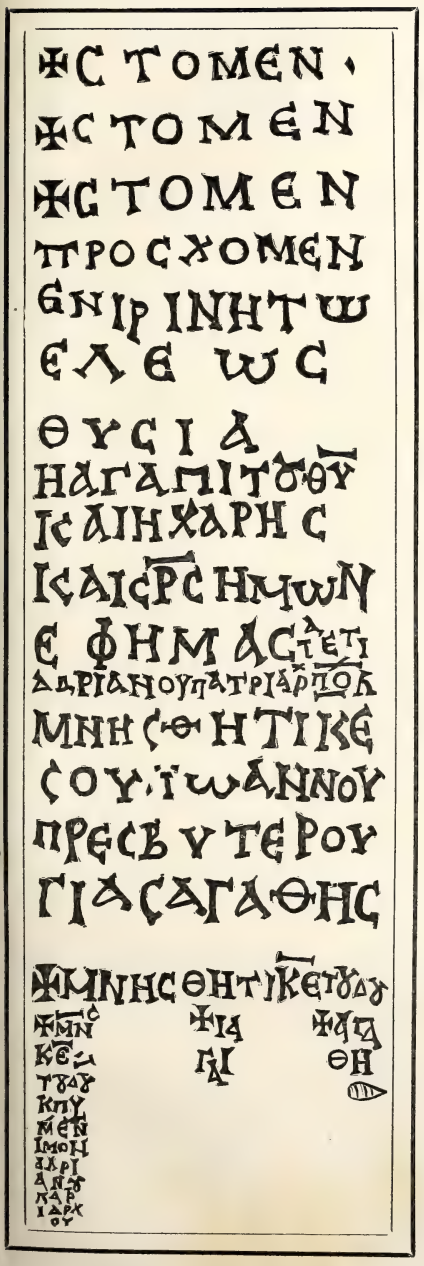
FROM AN IVORY DIPTYCHON

IN THE MUSEUM OF

JOSEPH MAYER F.S.A. F.R.N.S.A.

&c. &c. &c.

LIVERPOOL.


ΚΥΡΙΕ ΕΛΕΗΣΟΝ
ΚΥΡΙΕ ΕΛΕΗΣΟΝ
ΚΥΡΙΕ ΕΛΕΗΣΟΝ
ΠΡΟΣΧΩΜΕΝ
ΘΕΟΝΙΚΗΤΩΝ
ΕΛΕΩΝ
ΘΥΣΙΑ
ΑΓΑΠΗΤΟΥ
ΙΣΑΙΝΧΑΡΙΣ
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ΑΜΑΡΙΑΝΟΥΠΑΤΡΙΑΡΧΟΥ
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ΣΟΥΙΩΑΝΝΟΥ
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ΓΙΑΣΑΓΑΘΗΣ
ΜΝΗΣΘΗΤΙΚΕΤΟΥΔΟΥ
ΜΝΗ ΙΑ ΑΘΗ
ΚΕ ΓΙ
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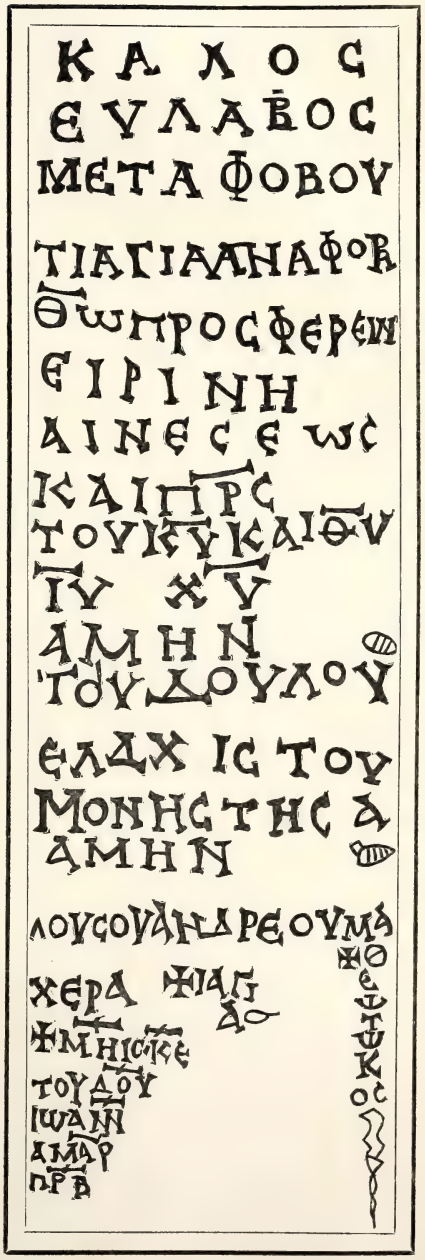
ΚΑΛΟΣ
ΕΥΛΑΒΟΣ
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ΑΜΗΝ
ΤΟΥΔΟΥΛΟΥ
ΕΛΔΧ ΙΣ ΤΟΥ
ΜΟΝΗΣ ΤΗΣ Α
ΑΜΗΝ
ΛΟΥΣΟΥΑΝΑΡΕΟΥΜΑ
ΧΕΡΑ ΜΙΑΣ
ΜΗΝΙΣΚΕ
ΤΟΥΔΟΥ
ΙΩΑΝ
ΑΜΑΡ
ΠΡΒ

Viewing the inscription from the palaeographical and philological point of view, we find a considerable corruption of the language and orthography, —indicating that the confusion of η, ι, υ, ει, οι, into the single sound of *Iota*, had already become common. So, also, ο and ω are confounded, as by the modern Greeks. The form of the A M Δ approaches the current Greek letters; the η is used for the ι,* and *vice versa*,† the υ for οι,‡ and the ο supersedes often the ω.‖

As to the meaning of the inscription, it is the following :—

"Let us stand well, let us stand with reverence, let us stand with fear, let us attend to the sacred oblation, in peace to offer to God. The mercy, the peace, the sacrifice of praise, and the love of God and Father, and the grace of our Lord and God and Saviour Jesus Christ, be upon us. Amen. In the first year of Hadrian, Patriarch of the city. Remember, O Lord, thy servant John, the least presbyter of the dwelling of holy Agatha. Amen. Remember, O Lord, thy servant Andrew Machera. Saint Agatha, Holy Mother of God. Remember, O Lord, thy servant and our shepherd, Hadrian, the Patriarch. Remember, O Lord, thy servant John, the sinner, the presbyter."

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* χαρης for χαρις. † ιρινη, τι, ι, αγαπι, ετι, for ειρηνη, τη, ἤ, αγαπη, ετει.

‡ πυμενος for ποιμενος.

‖ στομεν, καλος, ευλαβος, for στωμεν, καλως, ευλαβως; but likewise Θεωτωκος for Θεοτοκος, προςχομεν for προςεχωμεν.

PROCEEDINGS.

NINTH SESSION, 1856-57.

ANNUAL GENERAL MEETING.

St. George's Hall, 18th October, 1856.

Samuel Gath, Esq., in the Chair.

The minutes of the last meeting were regarded as read, and were confirmed and signed.

The Honorary Secretary read the following

REPORT:

At the close of the eighth year of the operations of this Society, the retiring Council have the gratification to report its continued progress; in internal resources, in external usefulness, and also, as they believe, in public esteem. It has already adapted itself so well to the new constitution of 1854, and its mode of procedure is so well known, that they believe their successors in office will be called upon rather to strengthen and complete the framework which exists, than to originate anything new.

Experience enables them to suggest two points on which greater completeness might be given to the present system. One is the Intellectual Inquiries of the Society, which might be reduced to order in some detail as well as in the general principles, so as to secure the best papers on subjects of interest, without any important division being too long overlooked. The other is a more specific arrangement of Finances, so that each class of receipts shall in general be applied to a distinct purpose, and each class of payments be regulated by the general income, so as to make the Society at once more efficient, and perpetually self-supporting.

In the month of August, the annual volume was issued to the members. It contains more than 300 printed pages, and is illustrated by sixteen plates, four of them being of unusually large size. It may be regarded as a fair sample of what the members may expect to be furnished with during the future years of their connexion with the Society. Each of the previous volumes is enriched by special donations of illustrations, and the present constitutes no exception to this interesting rule. Besides three plates contributed by members, five of the most costly in production together with tabular printed matter, had been prepared for the annual volume of a sister society, whose officers generously placed them at our disposal.

At the close of the seventh session, the number of members of all kinds was 444; at the close of the eighth it is 458. The following is a detailed analysis of them:—Life Members, 36; Resident Annual, 240; Non-resident do., 147; Ex-officio, 3; Lady Associates, 4; Honorary Members, 28. At the commencement of the first session the number of ordinary members was 217; there has therefore been, during eight years, an average increase of 27 per session.

During the past session a room has been rented, and suitably furnished, at No. 57, Ranelagh Street, and the Society's Library, Museum, and miscellaneous property, have been deposited in it. A Catalogue of the whole is in type; and the Council have the

gratification of announcing that the collection will be available to the members from the commencement of the ordinary meetings. As the extent and character of the collection change rapidly—partly from purchase and exchange, but chiefly from donations—only a limited number of copies of the catalogue will be printed, to be forwarded to those members who formally ask for it. With the view of adding to its present usefulness, the donations which have been received since the close of the meetings in May will be added, though they have not yet been formally laid before the Society.

It appears from the Treasurer's balance sheet, that the entire expenditure for the purposes of the past session (including the publication and issue of the volume) has amounted to £286 15s. By means of the annual subscriptions alone, the whole of this sum has been discharged, and a balance left of £25 1s. 6d. If to this we add entrance fees, compositions for life-membership, and the price of volumes sold, the receipts during the session exceed the mere sessional expenditure by £96 18s. 8d. Part of this sum has been employed in increasing the furniture and stock, and part in discharging both sessional and permanent liabilities incurred last session; yet a balance still remains in the hands of the Treasurer of £39 11s.

During the past session, one of the miscellaneous evenings was made more generally interesting by the Society procuring a larger meeting room than usual, and inviting the attendance of lady visitors. The order of business was followed as usual, but the paper selected for the occasion was one of great interest, either for a learned or a popular audience. The general result was so satisfactory that the Council recommend to their successors the practice of holding one such extended general meeting in the course of each session.

On the 24th of June, an excursion to Preston was undertaken, a brief account of which is given in an appendix to the volume. The kind and hospitable reception which the Society received from its members and other friends in that locality, including the Mayor, deserves a special and grateful mention. This, and the general results of the day's investigation, suggest that a similar excursion might be made annually, to some point of interest within the two counties, after the close of the sessional meetings. Opportunities for local investigation will also be afforded by the Congress of the Archæological Institute of Great Britain and Ireland, which will meet in Chester in the summer of next year. The members of this Society will rejoice to co-operate with fellow-labourers within their local limits; and to offer to them, when they visit Liverpool, such cordial welcome as they have gladly shown to other and similar societies.

The gentleman who was appointed Assistant Secretary at the commencement of last session, has felt it necessary to retire from the duties, owing chiefly to the state of his health; and the Council, after giving great attention to the subject, have appointed Mr. W. W. Rundell as his successor. Mr. Rundell occupied a similar position for ten years in Cornwall, with great credit to himself, and advantage to the society with which he was connected; and more recently he has become known to the public of Liverpool as the able and earnest secretary of the Compass Committee.

During the present year the Society has lost the usual per centage of members, by death, resignation, and change of residence. Among these was one of the members of Council, the late Thomas Moore, Esq., an original member of the Society. His family had been connected with Liverpool for several centuries, and he was himself deeply interested in historical and antiquarian pursuits. The Council have resolved to diminish the apparent number of members still farther, by putting into force law xii, for the formal ejection of two or three gentlemen who are largely in arrear to the Society.

The gentlemen who have been selected as suitable successors to those who retire, have all had experience either in the Council or on Committees; and they are all prepared to discharge the duties, the performance of which you may entrust to them.

It was then moved by Dr. Macintyre, seconded by Peter R. M'Quie, Esq., and resolved unanimously:—

> That the Report now read be adopted, and printed and circulated with the Proceedings of the Society.

The following statement of accounts by the Treasurer having been read, it was moved by JOHN POOLE, Esq., seconded by T. SANSOM, Esq., and resolved unanimously:—

That the Treasurer's statement of accounts be passed, and printed and circulated with the Proceedings of the Society.

THE HISTORIC SOCIETY OF LANCASHIRE AND CHESHIRE, *in Account with* THOMAS AVISON, *Treasurer.*

Dr. *Cr.*

	£	s.	d.	£	s.	d.
To Balance due to Treasurer				12	10	11
THE VOLUMES:—						
Binding part of vol. vii...	2	14	0			
Mr. Fairholt, engraving mask for do.	2	0	0			
Distributing vol. vii.....	3	18	6			
				8	12	6
T. Brakell, printing and binding vol. viii.....123	0	0				
Taylor and Francis, London, printing tables for Mr. Hartnup's paper ..	12	17	0			
W. J. Hammond, lithographing	13	16	0			
Distributing	4	16	3			
				154	9	3
SESSIONAL EXPENSES:—						
Printing circulars, prospectuses, &c.	7	14	6			
Postages of do., and miscellaneous	9	17	1			
Tea, Coffee, and attendance at meetings	11	8	6			
Use of St. George's Hall..	15	15	0			
Advertising.....	4	1	6			
Assistant Secretary	50	0	0			
Rent, taxes, and gas for rooms	6	16	9			
Collector and Accountant	12	9	8			
Circulars, &c., previous to annual meeting	1	10	6			
Insurance, cleaning, messages, parcels, cab hire, and miscellaneous	12	12	3			
				132	5	9
PERMANENT CHARGES:—						
Books bought.....	6	18	0			
Furniture and stock.....	15	14	8			
Stationery and printing ..	8	10	6			
Fitting up cases, &c., at rooms	5	1	1			
				36	4	3
				344	2	8
Balance to credit, exclusive of arrears and volumes in stock				39	11	0
				£383	13	8

	£	s.	d.
By Gross Receipts in Session viii, viz:—			
Subscriptions in arrear	46	4	0
Entrance fees for Session viii ..	27	6	0
Annual subscriptions	265	12	6
Life subscriptions	26	5	0
Books sold	18	6	2
	£383	13	8

Examined by

PETER R. M'QUIE,
SAMUEL GATH, } Auditors.

(E.E.)

Liverpool, 18th October, 1856.

THOMAS AVISON.

The Honorary Secretary then read a Paper, of which the following is an abstract.

FINANCIAL POSITION OF THE SOCIETY.

The second paragraph of the Annual Report, contains two suggestions, both of which are important. The following remarks apply to only one of them.

It must be obvious to the most superficial observer, that the payments which have to be made on behalf of a Society like this are of two kinds, namely—I. *Annual* Expenses, such as printing, working, refreshments, rents, postages; and II. *Occasional* Expenses, for furniture, fittings, repairs, books, objects, &c. In like manner the receipts of the society consist of I. *Annual* Subscriptions (guineas or half-guineas as the case may be,) and II. *Single* payments made by members as entrance fees, compositions for life-membership, and payments for volumes sold.

It will also be apparent on reflection that there is an intimate relation between the two classes of items on the one side, and the two on the other. The *Annual Subscriptions*, for example, stand opposite to the *Annual Expenses*, and those payments, which are made once only, should cover occasional outlay for purposes of a more permanent kind. It is impossible to ascertain the true condition of a society without keeping these classes of items distinct, either on paper or in the mind. On the one hand, a society which is retrograding may appear to progress, by using life compositions and other occasional receipts as if they were annual subscriptions, or by postponing the payment of accounts; and on the other, a society which is progressing may appear to retrograde, by making a large outlay on its permanent collection, or by investing a portion of the funds in a way which will make a certain but slow return. In general, when the ordinary annual receipts meet the ordinary annual expenditure the society is self-supporting; for if the occasional receipts be small, the outlay in furniture, books, and objects can be diminished accordingly. Of course the scale of public usefulness may be high or low, or may be elevated or depressed; I am now merely assuming that it is uniform. If the sessional income exceed the sessional expenditure there is an annual gain, which may be either applied to the increase of the stock, or reserved for future contingencies; and if at the same time the single payments are in excess of the occasional outlay, the society is flourishing financially, in both of its great departments.

Let us now apply these general principles to our own society, and see what is our actual condition. The annual subscriptions merely, during the past year, have amounted to £311 16s. 6d., and the annual expenses to £286 15s. 0d., leaving a balance to the credit of the society under that head. The single payments to the society have amounted to £71 17s. 2d., and the occasional expenses on property and stock to £57 7s. 8d., so that there is a balance to the credit of the Society under this head also. It is evident, therefore, that the Historic Society is at this moment thoroughly self-supporting; and we have a reasonable hope that the future will increase largely its means of usefulness both to the public and to its own members.

It should be borne in mind that this Society is bound by its Laws to print annually; and that it furnishes at present a respectable volume, illustrated, to each of its members. The Society is also bound to make other Annual payments, some of which may be diminished in future sessions, or entirely removed. The Volume for the past session has cost the Society £154, independent of donations of Plates; and the general expenses have amounted to £131. Hence, to accomplish the same results annually, without calculating on extraneous aid, will require an expenditure of about 300 guineas a year. This of course does not include casual payments for permanent purposes, or for contingencies.

The Society has risen regularly from 217 Members in October, 1848, to 430 in October, 1857. The sessional loss from various causes, amounts to about five per cent., [some Societies have changed to the extent of eleven or twelve per cent. per annum,] so that to maintain that number undiminished, at least 22 should* be enrolled each session. Any larger number will tend to increase the Society.

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* The actual number enrolled in Session 1855-56 was twenty-nine, and in 1856-57, sixty-three.—*Ed.*

It has often been said that a Learned Society in so large a town as Liverpool, if even moderately well worked, should never allow its members to fall below 500. If the proportions of the various classes of members were nearly the same as at present this would give an annual income* of nearly £450, or almost fifty per cent. above the sum at present necessary for the successful working of the Society. In 1844, the principal Learned Society of the town had only 90 members, and an annual income of about £50.

But it may be asked, how has the Society reached its present position if it be impossible to conduct it on less than an income of £300 a-year? So recently as the close of the sixth session its receipts did not reach that sum, even with the appropriation of life compositions. The reply to this inquiry is very simple. The Society, though continuous in existence, has occupied two distinct positions before the public. At first it gave attention to archæology, and to a limited extent to literature. It supplied the absence of one sectional subject in the town, and trusted to existing societies to supply the rest. It now undertakes to supply all, on a scale not hitherto attempted. It is in these latter circumstances that this enlarged expenditure becomes indispensable. In its earlier years, it was made self-supporting by peculiar management. Its meetings were few in number, and the working expenses were small, both in their entire amount and their relation to the income. The life subscriptions were not numerous, and they were used with the annual income, which might be regarded either as borrowing from the future, or as an equivalent for the additional volumes in stock, for sale to future members. But, besides all this, the working of the Society was gratuitous, and we received annually liberal donations in money, and professional services, for the illustration of our volumes. To adopt the language of business life, a few gentlemen gave the society a bonus annually, which, with economical working, kept the shares always up. The necessity for these sacrifices has now passed away, and the Society, even with its large undertaking, is able to settle every claim liberally and promptly. Yet we have strong reason to believe that, from the kindness of friends and the interest which individual members are likely to feel in particular subjects, such donations will not cease, but on the contrary, be frequent, and be highly appreciated as before.

Let us view the working of the Society a little more in detail. It may be stated broadly that each of our members pays the original smaller subscription for the production of the annual volume, but that our resident members pay another such sum to cover working expenses. Now, it is curious to see the relation which the two sums bear to each other in point of fact. We have 240 resident annual members, who on this principle contribute 120 guineas, or £126 a-year, for working expenses. If we deduct from the present balance sheet one or two petty items not necessarily sessional, this sum exactly meets the whole of the charges under the head of "sessional expenses." If the Society had reached 500 members, the sum available would be £144 7s. 6d.; and it is very improbable that under any circumstances, so large a sum would be required.

At the present moment, we have 36 Life Members on the roll, so that we ought to be able to show properly purchased and cash to the extent of £189. All this and more can be done; yet I am one of those who wish to see the whole of the life compositions

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* 35	Life Members at	£5	5 =	£183	15	0	
5	„ „	10	10 =	52	10	0	
				£236	5	0	Interest £9 10 0
275	Resident Annual Members						288 15 0
177	Non-Resident Annual Members						93 1 0
3	Ex-officio Members						0 0 0
5	Lady Associates						2 12 6
500	Annual Receipts						393 18 6
	Casual Receipts:—						
	Entrance Fees, say	£31	10	0			
	Books sold, say	20	0	0			
							51 10 0
							£445 8 6

bearing interest, and the permanent charges met from some of the other sources of income. It should be borne in mind that life compositions are available eventually, but not immediately; as they drop in at the termination of the lives. With a little economy and effort on the part of the council, a sum equivalent to the payments of all the surviving life members might be invested in two or three sessions, the other sums being appropriated to distinct objects. This would fully meet the suggestion in the report with which I set out, and would greatly simplify the duties of every succeeding treasurer, secretary, or member of council. The property which we have created would then exhibit an independent existence, and be attributable to individual generosity and good working alone.

It will easily be gathered from this that our society has now reached a point financially which it never reached before; and that its promise of future usefulness is greater than on any previous occasion. We have prospered and progressed when we had but few advantages to offer: it is not reasonable to suppose that our prosperity will cease when we have more to offer. The heavy up-hill strain which has continued without one moment's intermission for eight years is at an end, and the Society now requires only judicious guidance on a level road. Its intellectual resources have more than kept pace with its pecuniary ones; for as a scientific Society it knew no infancy, but sprang to maturity in a single session.

One of the destinies of the Society has not yet been accomplished, or only partially and indirectly. It is obvious that in creating an intellectual community in the midst of a more material one we ought to benefit not only our own members, but also, as far as possible, the public at large. With a pressure nearer at home, we have hitherto rarely looked outward; but it is surely time to do so. Everywhere around us, and especially in this town, we see those who yearn after the good and the beautiful, continually thwarting their own noble purposes by the incompetency which characterises them through life. And if it be so with them, what must it be with others still lower in mental elevation, however they may sit in high places; who regard man only as an animal machine, and the supply of his bodily wants as the sole business of life? I believe that it is not only allowable, but requisite, to instruct and guide our local public from time to time on subjects with which we possess unusual familiarity and thus to multiply the means of doing good. And I am not without a conviction that such services as we could thus render would be gratefully received.

It was moved by the Rev. T. Moore, seconded by William Burke, Esq., and resolved:—

> That the thanks of the Society be given to Dr. Hume for his interesting paper.

It was moved by G. M. Browne, Esq., seconded by J. Hughes, Esq., and resolved,—

> That the thanks of the Society be given to the officers and sectional members of Council, for their services during the past Session.

It was moved by Dr. Hume, seconded by T. Sansom, Esq., and resolved,—

> That the thanks of the Society be given to the British Association for the Advancement of Science, to John F. Marsh, Esq., and to the Rev. John James Moss, for their valuable contributions of illustrations to vol. viii. of the Society's Proceedings.

A ballot having been taken for the Officers and Sectional Members of Council, the following was the result as announced from the chair. (See page vi.)

Thanks were then conveyed to the chairman by acclamation, for his services during the evening, on the motion of Dr. Hume, seconded by John Poole, Esq.

6th November, 1856. MISCELLANEOUS MEETING.

J. T. Danson, Esq., V.P., in the Chair.

The Right Reverend the Lord Bishop of Sodor and Man was proposed as a member of the Society, and being ballotted for at the same time, in accordance with a Bye-Law, was declared duly elected.

Certificates of nine candidates, for election as members, were read for the first time. The Secretary explained that there was a much larger number of candidate members to be proposed, but it was not thought desirable to delay the general business of the evening, on any one occasion, by submiting a larger number to the ballot.

The following donations were laid upon the table :—

From Gilbert James French, Esq., Bolton. A beautiful guidon of silk, four yards long, for the Society itself. It contains the name of the Society, and the arms and badges of the two counties.

From Henry Kingsmill, Esq., Hong Kong. A Chinese Gong. The Snout of a Sword Fish. The skull of an Albatross.

From G. M. Browne, Esq. Syers' History of Everton, 1830.

From Peter R. M'Quie, Esq. Adams' Weekly Courant, 30th May, 1739. The Lancashire Omnibus, 5th April, 1832. A Norwich Play Bill, 13th May, 1799.

From Joseph Mayer, Esq., F.S.A. The Official and Illustrated Guide to the London and North Western Railway, by George Measom.

From the Author. British Antiquities, their present treatment, and their local claims, by H. H. Rhind, Esq., F.S.A.

From the Author. Suggestions for a medal to record the discovery of the passage to the North Pole; by Richard Sainthill, Esq., Cork. Also further suggestions by the same, dated 22nd March, 1850.

From Mrs. Ann Maria Heaton, Edge Hill. Copper Calendar, 1782. Commemorative medals—Roscoe, Brougham. Copper political tokens—Prince Regent, 1789, C. J. Fox. Seven half-penny tokens of last century, (Manchester, Rochdale, Lancaster, Macclesfield.) Six do., (Sheffield, Anglesea, Carmarthen, &c.) Various tokens—Birmingham, Banbury, Notts, Salop, Staffordshire, &c. (The farthing with effigy of Howard on the reverse.) Sundry Hibernian and Colonial copper coins, United States cents, &c., &c. Small Persian coin. Two Russian coins.

From Richard A. Tudor, Esq. A "Tyburn Ticket," signed by Sir Nash Grose, Kt., exempting Richard Foulkes from all parish and ward offices within the parish of Sallatin, Salop, for apprehending and prosecuting a felon. Dated 25th March, 1794.

From the Author. Some observations on an ancient Talisman, brought from Syria and supposed to be the work of the Chaldeans. By John Lindsay, Esq., Cork.

The Chairman handed the Banner to Mr. Mayer, as a liberal contributor, and one of the founders of the Society, to unfurl it for the first time.

It was moved by Dr. Hume, seconded by Henry Dawson, Esq., and resolved :—

That the cordial and special thanks of the Society be given to Mr. French for his interesting donation.

It was announced that the various books which had been presented to the Society during the recess, would be classified and laid before the members on the evenings of meeting appropriated to the sectional subjects to which they severally related.

Mr. James Boardman forwarded for exhibition a letter written by John Wesley, of date January, 1789, addressed to Mrs. Wagner, wife of Mr. B. P. Wagner, merchant of

Liverpool. Some portions of the letter could not be deciphered without difficulty. Wesley at this time was in his eighty-eighth year.*

Dr. Hume exhibited a "Sessions' judgment," in a dispute as to some land at Moreton, in Wirrall. It was dated 21st September, in 26th of Elizabeth.

Mr. Buxton exhibited a Sicilian Dollar of 1843, on which the objectionable words "Olim Bomba" were impressed; the former above, and the latter on the figure of Ferdinand. Also a silver coin of the short lived Roman Republic of 1848.

The Secretary read a communication from the Town Clerk, dated 31st October, stating that the Town Council had granted to the Society the use of the Grand Jury Room for its meetings, and of an adjoining room for refreshments, except during the period of assizes and sessions.

It was moved by JOSEPH MAYER, Esq., seconded by PETER R. M'QUIE, Esq., and resolved:—

> That the thanks of this Society be given to the Town Council for their compliance in this matter.

The Secretary was authorized to communicate that the privilege of attending the meetings of the Society was granted to the Treasurer of the Literary and Philosophical Society of Liverpool, in return for a similar arrangement announced by the Secretary of that Society.

A copy of the new Catalogue of the Library and Museum, still in galley slips, was laid upon the table.

The attention of members was drawn to a list of diplomas yet unclaimed by the gentlemen to whom they severally belong.

The following paper was then read:—

OPENING ADDRESS. *By J. Towne Danson, Esq., F.S.S., V.P., &c., &c.*

We now open the Ninth Session of the Historic Society of Lancashire and Cheshire. We approach this renewal of our meetings, and of our labors in common, with increased numbers, with enlarged individual experience, and with clearer conceptions alike of our objects, and of the means by which they may be worthily attained.

United by the bond of a common duty—that of advancing, during our own time, and to the extent of our power, the learning of our own locality—we have before us as noble a task as ever exercised the faculties of civilized man. Not yet can we expect to comprehend all that is required for the fulfilment of such a task. Much of it lies in the yet undiscerned future. But much also is open to view, and nothing more so than that each session, as we return to it, we are called upon not merely to continue, but to extend our past efforts. Our onward course admits of no medium between progress and decline. Nor is it desirable that it should. What we do is not for ourselves alone. Else were it little worthy of the time and labour we bestow upon it. We rejoice to feel that it shares, in some sort, the significance and the value due to every earnest endeavour of mankind to increase and disseminate knowledge; and that it shares, too, the same onward impulse. Our prosperity assures us that, limited and imperfect as our operations have hitherto been, they have supplied a real and a growing want. Also it assures us that if we would secure a success thus dependent upon surrounding cir-

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* Near London, January, 1789.

My dear Mrs. Wagner,

You send me very welcome news respecting your two daughters. I hope they will not be content with an outward change, but will give God their hearts. It avails nothing to be almost Christians. Let them be Christians altogether, enjoying all the mind that was in Christ, and in all walking as Christ walked. With regard to the great man, [George III.] there is no possibility of access to him, he is so entirely hedged in with physicians, otherwise I believe I myself could cure him. The will of the Lord be done.

If it should please God that I live till March, I shall hope to wait upon you at North Hall. Peace be with all your spirits. Peace, dear, dear, Spirits!

I am, my dear Mrs. Wagner,
Your very affectionate servant,
J. WESLEY.

cumstances, we must, in no degree, neglect that progressive improvement of method and elevation of purpose which, more than aught else, so honorably distinguish the age in which we live.

To us, indeed, unimpeded by obstacles that beset the paths of most other public bodies, with no vulgar inducements to obstruct, and many noble incentives to promote the adoption, in every case, of the course most consonant to the loftiest intelligence,—to us, I say, it would seem not improperly to belong, by such means as our humble powers may afford, to preserve, to promote, and if possible to make more prevalent, these most promising characteristics of the public action of our time.

And peculiarly fit does it seem, that when assembled on an occasion like the present, we should, with somewhat more than accustomed vigilance, scan the drift of our proceedings, and mark, each for himself, its relation to those great outlines of our collective duty, a close regard to which constitutes the best security for our continued well-doing, and our only valid title to the prominent place we have assumed among our fellow citizens.

To associations more even than to individuals is such occasional self-examination needful. The best practicable union falls short of unity. As a body we must always lack the safe-guard of self-consciousness. Our sense of duty, however clearly defined the duty itself may be, must, when compared with that of an individual man, be more or less vague and imperfect. What should equally concern many, is apt sufficiently to concern none. And thus in the absence of special excitement, or an occasional revival of the sense of duty, our energy tends to wane, our aspirations and hopes of the future to fade into indifference, and our powers to fall more or less under the insidious despotism of routine.

To no better purpose, then, does it seem to me that I can use the opportunity afforded by the request of your Council, that I would address you at this, the first meeting of the Session, than to call to our remembrance the high purposes for which we are associated, and by what means we can best, in the immediate future, seek their accomplishment.

And who amongst us, standing aside from the current occupation of the hour, can regard the position we now occupy as a Society and not feel his soul uplifted before the magnitude of the duties we may make ours, and the amplitude of the means tempting us to their fulfilment. In part this position has been won by our own exertions. In part we owe it to circumstances. Need I add that the grateful pride its contemplation inspires, assumes that our aims are worthy of the vantage ground it affords; that its true value lies in the opportunity it offers for future well doing.

Our aims have more than once been ably and clearly defined. Though primarily local, they are—under the changes recently effected in the structure and working of the Society—adapted to as wide a field of action as, while we own any local ties whatever, we can profitably occupy. Nor, wide as is the work before us, and well adapted as our arrangements now are for compassing its utmost bounds, are the external facilities awaiting its performance in any degree less ample. In all these respects we are fortunate. In all of them is the lot that has cast us upon this time and place a happy one. In an age distinguished from all former ages by the predominance of the commercial tendency, we find ourselves placed exactly where this tendency has received its highest developement. The manufacturing district of Manchester, and the port of Liverpool, taken together, form, at this moment, the most remarkable and most progressive, if not in every respect the most important centre of the commercial activity of the world. Nowhere else is so fully revealed, so obvious to the contemplation of man, the exquisite wisdom of the arrangement which has made commerce the overpowering and universal instrument of material civilization—a mean whereby the primary necessities of our nature are made at once subservient to the diffusion of knowledge, and powerfully suggestive of the natural brotherhood and mutual dependance of mankind. Fit scene to direct enlightened curiosity to the almost infinite variety of human activity, so multifarious in direction and result; and irresistibly suggestive of speculation on the ultimate destiny of a race whose progress is now made by steps so gigantic, that the hopeful dreams of one generation become the familiar realities of the next. Fit also to

remind us that great advantages have ever their counterpoise; and that those who would achieve great ends, must not hope to avail themselves of easy and unincumbered methods.

We can hardly look long upon this scene, and fail to learn that all human action in the presence of great events is subject to collateral influences of commensurate power, the full scope of which, in our time, we may in vain endeavour to comprehend, but of which it behoves us never to be forgetful. The astonishing progress—rapid beyond all precedent during the last half century—of which our own district has afforded the most eminent example, has been achieved only by a mental devotion to the purposes of the hour which, well as it is said to befit our English character, and tempting as are its material fruits, it would ill become our Society to aid in fostering.

And here we encounter one of the most delicate, and not the least difficult, of our duties: that of watchfully regarding, and, while willingly using, never slavishly submitting ourselves to, the ruling ideas of our time. Germs, these, capable of infinite expansion—insinuating themselves wherever may be found the requisite facilities for their growth; and always directing, more or less exclusively, the tendencies not merely of science, literature, and art, but those of politics, legislation, and history itself. Ideas rule. Facts not constituting science, furnishing but the data on which it rests, the superstructure can be raised only under prior conceptions of the general principles to which the facts are to be referred. These conceptions are necessarily the offspring of the philosophical ideas of the time. Literature and art, scarcely less dependent on a trained exercise of the observing faculties, but less rigidly bound by logical inference to the observed facts, still more freely follow the track of the reigning philosophy. National policy and legislation, too, whether determined by despotic or by popular modes of government, are equally swayed by the same influences. And history, best performing its office when most truly embodying the spirit of passing events, is, when drawn from contemporary sources, unavoidably permeated, and too often delusively coloured, by the leading philosophical dogmas of the age.

The widely varied character of the topics we are in the habit of treating, though it may make less marked the effect of particular doctrines on the course of our proceedings, also brings us more effectually, even because less palpably, within the range of the peculiar philosophical tendencies of the time; of those which, as they are more or less vividly impressed upon all cultivated minds, need seldom be distinctly expressed. And without canvassing, in the remotest degree, the comparative merits of prevailing systems, or hazarding a single remark that might be deemed depreciatory of any, I may affirm, what is indeed too obvious, that the close attention so generally given during the last eighty or ninety years, by the leading nations of the world, to the physical sciences, and to the physical well-being of man, has impressed upon the mental and moral training of the existing generation a leaning towards materialism, and an inaptitude to appreciate the more abstract and recondite conceptions upon which the physical laws themselves ultimately repose, by no means favorable to an equable and unbiassed extension, in these days, of the yet narrow circle of our knowledge; and which, receiving, as it very probably does, undue encouragement from the daily avocations of a manufacturing and mercantile life, we may justly deem it our duty, on behalf of a less partial standard of truth, rather to criticise or to oppose than implicitly to follow. Unless I am greatly mistaken, it is especially incumbent upon us, here and now, to seek and steadily to adhere to a sound mean between the popular empiricism, which moves only within the limited range of sensation, and the lofty idealism, owning no bounds, which would discard the method of induction for one of mere hypothesis. And even in so doing to remember the bias we inherit from a prior age, and share in this and to lean, if lean we must, rather against than towards that bias.

A pregnant instance of the need for such caution is at hand in the utilitarian bent of the particular community of which we form part. While it is neither possible nor desirable that we should ignore the special value possessed by knowledge applicable to purposes of immediate utility, it would still less become us to overlook the mental degradation, the dwarfing and crippling of the faculties, which surely awaits a too exclusive attention to such knowledge. True it is that all learning derives its value

from the prospect of a practical application, whether this be near or distant. True, also, that direct and immediate utility is the most certain test of the reality of all our acquirements. But no less is it true, that were the boundaries of our knowledge enlarged only under the influence of considerations so limited, not only would utility itself be, in the end, but poorly served, but we should be deprived, in great part, of the highest and best result of the pursuit of knowledge; that systematic and expansive developement of the mental faculties which, to so large an extent, marks our elevation in the scale of being, and determines our ability to contemplate, with due breadth of view, and in a fitting spirit, the ways of the Deity, as revealed in his works. And though no authoritative definition of the functions of a Society like ours yet exists in our literature to warrant the assertion, I will venture to affirm that in no efforts we may make to form or to mature an effective public opinion in favour of a liberal and equable pursuit of all sound knowledge, without reference to the probability of its yielding an immediate and mercantile profit, shall we in any degree overstep the most rigidly correct outline of our duties as a Society. Nay, I am even disposed to think that if our operations have to the community any value worthy of especial note, it is to be looked for here—to be found in the tendency they have to withdraw some of its more active minds from close and constant contemplation of particular parts and details of the mighty system around us, and to fix them at times, and for a while, through the medium of knowledge not commonly deemed useful, on the less apparent and more general laws underlying and connecting these, and thence, with expanded views, on the system itself, and finally upon the infinite majesty of its Author.

With means so large within our grasp comes, of course, a commensurate responsibility for their use. Confronting and comprehending opportunities so great, we realize one of those crises in human existence the issue of which determines our fitness for the place we fill. That the work now before us is to be done admits not of reasonable doubt. As little can it be doubted that we who have found, and put our hands to, can also accomplish it. We have but to raise our conceptions to the level of what lies before us—to be worthy of the part we have ourselves chosen—to find awaiting our use ample facility for shewing once more in England what may be done by even a few men earnestly and intelligently bent upon the furtherance of a noble design, conceived, and capable of being executed, in accordance with the spirit of the time.

There are, and we know there are, conditions of the success we crave. We know that they must be complied with. The prize is for the winner, not for the wisher merely. We are beset with temptations to error. And vast as are the advantages we possess, we have yet much to do ere we learn how best to use them.

Above and before all, we have to guard ourselves against the assumption—fatal to many who have indulged, and justly indulged, hopes quite as bright as ours—that whilst our labours are continued in form, they are also continued with effect. The principle of association is now so familiar to us, as a means of achieving with ease results beyond the utmost efforts of individual men, that a corresponding effect is commonly looked for wherever we see that principle in action. Especially deceptive is this tendency as applied to literary and scientific societies. Whence, for the most part, a too easy and too early satisfaction with what is done. Their meetings are made agreeable by the mutual good-will with which men of business assemble to relieve the mind of its daily load of care. Those who take upon themselves to provide for the instruction or amusement of the rest, are met with a feeling of gratitude at once natural and laudable. Compliments, for the most part, take the place of criticism. And, excepting the provision of a passing recreation for minds of a certain degree of culture, little is effected—very little that endures, or by which it might be known that such associations had existed. To suppose that we can entirely avoid an error so common, were to be too sanguine. But having once recognized the liability, we can at least be on our guard against its commoner indications.

Nor can it safely be inferred that because power is present, and is applied, it is also well directed. In many ways it may be misapplied; and in none, perhaps, is it more commonly wasted than through the want of a degree of combination which prior communication among the working members of the Society might readily effect. Doubtless

it is a wise, if not an indispensable course, to accord the freest course to the various powers and opportunities of all who may be able and willing to labour in the common cause; and thus to leave to individual choice not only the selection within a very wide range of the topics to which, in each succeeding session, our attention shall be directed, but also the method of their treatment. And with freedom so unlimited, we can look for but scant measure of discipline, beyond such as each may think proper to impose upon himself. Yet there is undoubtedly much to be said in favor of such limitations upon this freedom as, being otherwise applicable, may keep it from degenerating into mere laxity, and depriving our proceedings of the unity and coherence so necessary to the accomplishment of a common purpose. And, accordingly, I believe there is amongst us a very general conviction of the superior value of such contributions to our proceedings as are distinguished by peculiar regard to the primary objects of the Society and tend to the conjoint illustration of particular topics, especially those of local and contemporary interest. The prime advantage of combination is now well recognized in the intelligent division of labor; and to the gradual growth of a co-operative tendency among such of our members as may devote themselves to the same or to allied sections of our common field of enquiry, we may, perhaps, justly look as to the source hereafter of a large and most welcome accession of power.

Every science is now pressed into the service of commerce; and commerce subserves, in turn, all the arts of life. It has itself risen to the dignity of a liberal art; and wherever carried on in consonance with the dictates of high principle, its masters are now more nearly the effective rulers of the affairs of nations than the men of any one profession have ever before been. We have the rare good fortune to find ourselves at the very seat and centre of the commercial energy of our time, fast by the very springs whence the blessings of material civilization are thus being diffused over the earth. For where, better than on the banks of the Mersey, may men observe how the exchange of objects produced in one region of our planet, to be consumed in another, does sooner or later, happily and inevitably, link together in the firm bonds of mutual interest, in habits of peaceful industry, and in a gradual elevation of all the incidents of human existence, nations divided not only by difference of blood, of language, and of religion, but by distance and difficulties of transit, which to the uncultivated intellect must alone have seemed for ever insurmountable. Or where more fitly learn how vast is the fund of power, convertible to the noblest uses, conferred upon nations as upon individuals, by superiority of intelligence, enterprise, and industry: or how much this power is augmented by discreet and unremitting study of the laws of nature, and by such advancement of the learning of our time as is the proper office of societies like ours.

The papers likely to be laid before you in the present session seem to promise a fair compliance with the expectations of the Society, even raised as these have been by the gradual improvement in number, variety, and excellence exhibited by these contributions to our proceedings in preceding sessions.

Let us trust—and trust with that faith which is born of earnest endeavour—that every succeeding session will find us still better provided. If it be not so, the deficiency will assuredly be traceable to ourselves. Within the distinct but co-ordinate limits of our three departments—archæology, literature, and science—we have scope for every branch of enquiry we can legitimately desire to pursue, for every investigation that can throw light upon the history of our district, illustrate its present condition, or suggest new steps in the career of growing utility and power which has already made that district the busiest and wealthiest section of a mighty empire, and given to it an influence in the affairs of mankind more potent than that wielded by any other of equal area and population on the face of the earth.

13*th November*, 1856. LITERARY SECTION.

David Buxton, Esq., in the Chair.

The minutes of the last two meetings were read and confirmed.

James Heywood, Esq., M.P., who had retired from the Society, was allowed to resume his connexion by paying the fees for Membership from the date of his temporary withdrawal.

The following selection from the donations was laid upon the table;—

From the Society. Memoirs of the Literary and Philosophical Society of Manchester, vol. vi. second series;—Dr. Robert Angus Smith's life of Dalton, forming vol. xiii. of the Memoirs of the Society.

From the Society. Journal of the Statistical Society of London, vol. xxx., parts 2 and 3, for June and September, 1856.

From the Society. Transactions of the Chemists' Association of Liverpool, 1856.

From the Author. Genealogical Essays, illustrative of Cheshire and Lancashire families, and a memoir of the Cheshire Domesday Roll, by George Ormerod, D.C.L., F.R.S.

From the Author. A pamphlet entitled The Manchester Exhibition Review. Royal Institution, 1856.

The following objects were exhibited:—

By Peter R. M'Quie, Esq. Stow's Survey of London, 1598. (Pub. 1603.)

By the Rev. Dr. Hume. A Chinese coin.

The following Paper was then read:—

On the Relation between the Material Progress of the United States, and the Capital and Labour of Europeans. *By Edward Clibborn, Esq., R.I.A.*

The opinions advocated in this paper will be understood from the distinct announcement in the title. It is undeniable that the commercial necessities of one or more countries stimulate the industry of another; and it is natural that the superabundant capital of one nation should sometimes find its direction and successful expenditure in another. But such effects are reciprocal; and they differ in degree according to circumstances. The necessity for a constant infusion of new blood, by emigration from the older countries, was dwelt upon; and such a change in population naturally leads to a corresponding change in manners, political principles, and social grades. These are becoming less appreciable, and in the course of time will practically disappear. The writer noticed a tendency in the natives of the United States, which has frequently attracted observation;—their avoidance of physical labour when possible, and their desire to live rather by the exercise of the intellect. This is, in effect, the exchange of the manual for some of the liberal arts.

20th November, 1856. SCIENTIFIC SECTION.

Joseph Mayer, Esq., F.S.A., in the Chair.

The Minutes of the last Meeting were read and confirmed.

The following gentlemen were balloted for, and declared duly elected members of the Society:—

William Lawrence Stroud, Esq., Oxton.
Thomas Croxton, Esq., Blue Coat School, Bolton.
A. Craig Gibson, Esq., Lower Bebington, Birkenhead.

The following donations were laid upon the table:—

From the Society. Memoirs of the Royal Astronomical Society, Vols. xi. to xxiv. (Fourteen volumes 4to.)

From Albert Way, Esq. An impression on gutta percha of a royal seal of Edward IV., for the Chancery of Monmouth as parcel of the Duchy of Lancaster.

Among the objects for exhibition were the following:—

By John Hartnup, Esq. Delineations of Saturn, as observed by a Newtonian Equatorial of 13 inch aperture, Nov. 1852, and March 27th and 29th, 1856; also a representation, on a large scale, of the Lunar Crater "Copernicus," taken at the Observatory at Rome, 19th Nov., 1855.

By the Rev. Dr. Hume. A curious tobacco pipe from the Crimea, with figures, &c., carved by a Sardinian Officer.

An impression from the small state seal of Oliver Cromwell.

Mr. Mayer, with a view to promote a better mutual acquaintance of the members of the Society, invited their attendance at his Museum in Colquitt-street, on Thursday evening, the 27th November.

The Paper for the evening was, On Binocular Vision, and the Theory of the Stereoscope, *by John Newton, Esq.*

That the right and left eye pictures of all near solid objects must be dissimilar appears so self-evident, and is so readily observed, that it seems useless to dwell on so plain a truth. And yet, until Wheatstone published his celebrated essay in the Philosophical Transactions for 1838, this great fact had remained barren of any result to the theory of vision. He drew right and left eye pictures of simple solids, such as a cube; and, on viewing them by an instrument which should unite the two dissimilar pictures optically (just as we do habitually by the convergence of the optic axes) he found that the two flat pictures vanished, and in their place appeared a single picture of startling solidity. The instrument itself he called a stereoscope; but the form he invented has given place to a simpler one contrived by Sir D. Brewster, and in place of the black diagrams of simple geometric solids, at first employed, Photography now enables us to take right and left eye pictures of the most complex kind, with an accuracy and beauty formerly quite unattainable. Portraits, domestic scenes, the glories of nature and art, are all presented to us in the stereoscope with a solidity and reality that has made it one of the most popular—as it is assuredly one of the most interesting discoveries of this age. Thus a main use of two eyes in vision is at once rendered capable of proof to every one, and it is now taught as a fundamental truth, established by Wheatstone, "that all our perception of solidity derived through the visual sense is consequent upon the mental combination of the two dissimilar pictures upon the two retinæ."* Again, the single vision which we enjoy with two eyes has been also attempted to be explained on various theories, as that of "corresponding points on the retinæ producing but one impression on the sensorium," and the so-called "law of visible direction." Now, I believe it will not be difficult to shew that all these are at best but imperfect theories, containing partial truths. They leave out of view the action of the single eye. The two eyes frequently differ in the same individual, both in optical perfection and in focal length. Such persons have much difficulty in using the ordinary stereoscopes. Again, in the majority of animals—even those most resembling man—the eyes do not converge, but are placed sideways to the front of the head. All the three theories therefore mentioned cannot apply to such. Yet we have every reason to believe that single vision with two eyes, and the power to appreciate distance and solidity must be as perfect with them as in man. Wheatstone's theory of solid vision fails also in not explaining solid vision with one eye; yet this most certainly exists. Many pass through life with but the use of one eye, yet I have seen such a person play at cricket, snuff a candle, thread a needle, and perform many similar acts, which, if the theory above quoted be true to its full extent, should have been physical impossibilities. Any one who has been obliged to employ but one eye for a considerable period, must have perceived how rapidly he improved in "monocular vision." Again, many pictures,

* Carpenter's Human Physiology, 5th Edition, p. 919, &c.

especially photographic copies, taken with striking contrast of light and shade, or, better still, the beautiful miniature copies of nature seen on the ground glass of the camera obscura, look extraordinarily solid. Yet all pictures are really "monocular" representations of objects as viewed with one eye. How is this, if the visual perception of solidity be entirely dependent on binocular vision? Again, in viewing distant objects or scenes, the optical parallax is so small that we have really two similar pictures (that is monocular, merely repetitions of the single-eye picture) on the two retinæ. Yet we appreciate the most distant view intensely, and readily distinguish it from a flat representation. To give the single eye the same advantages in viewing photographic pictures that the two eyes have in the best stereoscopes, I made a single eye instrument, substituting for the two semi-lenses one large lens. On viewing thus fine collodion positive pictures, some appeared to project in bold relief, especially portraits and copies of white statuary, but I did not find nearly so much illusion in the best views or landscapes I could take.

At present a fierce conflict is raging amongst photographers, which seems as far from settlement as ever, viz.: the distance at which the two cameras should be placed asunder in taking the double picture for the stereoscope. Many follow Sir D. Brewster, who stoutly maintains that the two lenses employed should be separated the same distance as that betwixt the human eyes, viz.: two and a half inches, and should converge upon the object. Undoubtedly in this way we get sufficient relief for very near objects, as portraits; but it is equally certain that we cannot thus get the effect of distance in landscapes. M. Ferrier, whose stereoscopic transparencies are so famous, separates his lenses to far greater distances. Thus, in a panoramic view of Paris, taken from the top of Notre Dame, he took one picture from one of the towers, the second from the other. How shall we reconcile these apparent discrepancies? I think this will not be difficult by giving its due value to monocular vision. Two monocular pictures of near objects—as a group of statuary—that is, two pictures taken without moving the camera, unite in the stereoscope to give an appearance of decided relief, as I have ascertained—though not so great, of course, as when the camera was moved. Also, for near objects a slight separation of the cameras produces a considerable angle of parallax. Now, I have shown that in viewing distant objects our eyes unite two monocular pictures. These pictures, indeed, are perfect, with all the atmospheric effects, the ever varying grades of light, and shade, and colour, which constitute natural perspective. But in the best photograph there is no atmosphere. The shadows are opaque. The varying tints of colour are wanting; worse still, they are rendered entirely wrong, green and red appearing as black, whilst even dark blues appear as whites in the resulting pictures. To make up for these, and innumerable other defects and shortcomings, it is found absolutely necessary to exaggerate greatly the optical parallax before the effect of distance can be duly witnessed in the stereoscope, for all views except very near ones. The lenses of our cameras have a focal length of about five inches, those of our eyes of not quite one inch; so that our stereoscopic cameras may rather be compared to the eyes of giants, which would be placed about twelve inches asunder. Thus, Sir D. Brewster is evidently wrong both as to theory and practice. The fact is, no exact rule can be laid down for taking stereoscopic pictures, and practice alone can determine the optical parallax which will give the effects desired. To recapitulate, solid vision cannot be accounted for by any known optical law. It is not a blind instinct born with us, but the result of the impressions—the education of a lifetime. The infant sees only flat pictures, all objects appearing at the same distance, and it gropes like a blind man for many months, during which the other senses, especially that of touch, are continually used to correct the evidence of the eyesight. Such has, we know, been the case with those who have recovered the sight of both eyes later in life, after operations for cataract. Another use of binocular vision, besides that pointed out by Wheatstone, is, no doubt, to intensify the image by repetition of the sensory effect on the two retinæ. Muller, and other physiologists, have, indeed, denied that anything is gained in illuminating power by the use of two eyes. If one eye only be used the pupil is said to dilate so as to admit double the quantity of light. This I believe to be an error. The united picture in the stereoscope always appears brighter and more distinct than either

separately. I took two photographs in rapid succession, of the same individual, one eye being closed in the first instance, and on measuring the diameter of the pupil with a micrometer microscope, there appeared extremely little difference in the two cases.

We have, then, two eyes, first, that the impression on the sensorium may be intensified by repetition; secondly, as a safeguard, that if the use of one be lost, so precious a sense may still be retained; thirdly, that the two dissimilar impressions may afford data for estimating more perfectly the distances and directions of near objects; besides other less important uses.

It is deeply interesting to notice the many analogies between the senses of hearing and of sight. Thus, we have single hearing with two ears,—binaural hearing,—the result of the union by the sensorium of the two dissimilar impressions. And if the brain be disordered, as by intoxication, or bodily ailments, double vision, as well as confused hearing, are common results. Nay, the musical pitch of the two ears often differs, say half a note, just as the focal length of the two eyes often differs. Binaural hearing also enables us to judge of the direction and distance of sounds—solid hearing. The axes of the two auditory apparatus are not opposite each other, but form an obtuse angle directed forwards and outwards. According to Buchanan, the direction of this angle exercises a remarkable influence on the auditory sensibility. Monoaural hearing will give us a partial appreciation of distance by the perspective, as it were, of sounds; their varying intensity, their light and shade; whilst the dissimilar impressions on the two ears render this determination far more perfect.

To conclude, the eye and the ear are to us what the instruments of the surveyor are to him; they are widely separated to give us a base line, at the ends of which are stationed our most perfect instruments of observation. At first we judge of the dimensions, forms, and distances of objects by the sense of touch. We grope about the world. After a time, and very slowly, we transfer the information thus gained to the eye and the ear, which, as they become more highly educated, enable us to judge of distance and direction without actual contact.

[This paper was illustrated by a large number of Stereoscopic views, and various instruments, including several forms of Brewster's Lenticular Stereoscope; Knight's Cosmoramic Stereoscope; a new form of Stereoscope, with lenses of large size, by Abrahams, Lord-street; and a very large Wheatstone's reflecting Stereoscope.]

4th December, 1856.—ARCHÆOLOGICAL SECTION.

J. Towne Danson, F.S.S., V.P., in the Chair.

The minutes of the last ordinary meeting were read and confirmed.

After the usual ballot, the following were declared duly elected as members of the Historic Society:—

Sir J. P. Kay Shuttleworth, Bart., Gawthorp Hall, Burnley.
John Ansdell, Esq., St. Helens.
Frederick Broughton, Esq., Ulster Railway, Belfast.
W. G. Crory, Esq., 7, Upper Duke Street.
Walter W. Driffield, Esq., York Buildings, Sweeting Street.
Robert Evans, Esq., Eldon Grove, Rock Ferry.
John O'Donnell, M.D., 34, Rodney Street.
Rev. Philip Frost J. B. Hains, The Parsonage, Hoylake.
Edward Howell, Esq., Church Street, Liverpool.

The following donations were laid upon the table:—

From Lord Londesborough. Miscellanea Graphica, No. ix.

From the Author, Chas. R. Smith, Esq. Collectanea Antiqua, vol. ii, pts. 1 and 2.

From the Author. How to Learn, and what to Learn, by Rev. Dr. Booth, Treasurer of the Society of Arts.

From the Editor. The Scottish Field, edited by John Robson, M.D., 1855, for the Chetham Society.

From the Society. Report presented to the Cambridge Antiquarian Society, at its 16th General Meeting, May 5th, 1856. Also communications made to the Society, No. 6.

From T. T. Wilkinson, Esq., F.R.A.S. Fragments of ancient burial urn found at Catlow Stone Quarry, on the Briercliffe ridge of hills, near Saxifield, and Castercliffe.

Dr. Hume exhibited a fine specimen of the "leathern bottel."

Thomas Marshall, Esq., of Preston, exhibited three Roman silver coins found near Preston; two Trajan, one Vespasian.

The following Paper was then read:—

On the Battle of Brunanburh, and the probable Locality of the Conflict,* *by T. T. Wilkinson, F.R.A.S.*

11*th December*, 1856. LITERARY SECTION.

Peter R. M'Quie, Esq., in the Chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen were balloted for and duly elected members of the Society.

Robert Brown, Esq., Preston.
Edward Cranage, Ph.D., Old Hall, Wellington, Salop.
W. Hope Jones, Esq., Hooton.
James Kershaw, M.P., Stockport.
John James Myres, Esq., Bank Parade, Preston.
Henry Newsham Pedder, Esq., Preston.
Joseph Robinson, Esq., Lord Street.
Richard Threlfall, Esq., Avenham Terrace, Preston.
Thomas Walmsley, Esq., Preston.

The following donations were laid upon the table.

From the Society. Journal of the Royal Asiatic Society, vol. x. 3 pts, vol. xiv, pt. 2.

From the Society. Proceedings of the Liverpool Philomathic Society, vol. i. for 31st session, 1855-56.

From the Author, D. P. Thomson, Esq., M.D. Liverpool Described, 1854. The Philosophy and Poetry of Weather Knowledge.

Dr. Macintyre exhibited an ancient episcopal swivel seal with three facets, on which are engraved the Diocesan and personal arms with crest and cipher. Also a minute ivory carving of the crucifixion with two figures at the foot of the cross, probably the Virgin and St. John.

The Chairman on behalf of the Society then presented Dr. Thom with the Diploma of Life Membership, as resolved upon at the Special General Meeting on the 4th instant.

The following Paper was then read:—

On Poetic Resemblance, Imitation, and Plagiarism,† *by David Buxton, Esq.*

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* Transactions, p. 21. † Transactions, p. 77.

18*th December*, 1856. SCIENTIFIC SECTION.

THOMAS SANSOM, A.L.S., in the Chair.

The Minutes of the last Meeting were read and confirmed.

After a ballot the following gentlemen were declared duly elected members of the Society.

Captain Campbell, R.L.A., North Battery.
Samuel Cartwright, Esq., Bushell Place, Preston.
Rev. Thomas Corser, M.A., Stand, Manchester.
Henry Gerard, Esq., 52, Canning Street.
Thomas Holden, Esq., Summerfield, Bolton.
Philip Juncker, Esq., Monckton lodge, Anfield, Walton.
Thomas Beeby Mosley, Esq., English and Irish Telegraph Company, Liverpool.
Robert Towneley Parker, M.P., Cuerden Hall, Preston.
Rev. W. Quekett, M.A., Rectory, Warrington.

The following donations were laid upon the table :—

From the Society. Notices of the Royal Astronomical Society, vols. viii, ix (unbound), x, xi, xii, xiii, xiv, xv.

From the Society. Proceedings of the Royal Society of Edinburgh, 1853-54, 1854-55, 1855-56.

From Mr. Rundell. Specimens of incrustations from steam-boilers.

Mr. Leyland, from Honduras, exhibited a large number of specimens in Natural History, chiefly birds. These were described by Mr. Moore, of the Derby Museum, who said they were particularly interesting on geographical grounds, as showing the southern limits of some of the species, and the northern limits of others.

The following particulars respecting the swivel seal exhibited at the last meeting by Dr. Macintyre, were furnished by Dr. Hume. The seal belonged to Robert Calverley, D.D., Bishop of Peterborough. He was of an Essex family, was a fellow of University College, Oxford; was appointed Regius Professor of Hebrew in 1715; was afterwards Canon of Christ Church, Oxford; was appointed Bishop of Llandaff in 1725, and translated to Peterborough in 1728, where he died in 1748. One facet of the seal contains his official arms, Peterborough Diocese impaling Calverley; another, the cipher R. C., direct and reversed; and the third his family crest, which however he as a Clergyman was not entitled to use.

The following Papers were then read :—

ON THE YAK, OR GRUNTING OX OF THIBET; * AND SOME OF THE RECENT ADDITIONS TO THE FREE PUBLIC MUSEUM, *by Thomas J. Moore, Esq.*

ON SOME FOSSIL TREES RECENTLY DISCOVERED AT BURNLEY,† *by T. T. Wilkinson, F.R.A.S.*

1*st January*, 1857. ARCHÆOLOGICAL SECTION.

JOHN ROBSON, M.D., in the Chair.

The minutes of the last meeting were read and confirmed.

After the usual ballot, the following gentlemen were declared duly elected members of the Society :—

Francis James Eaton, Esq., 41, Richmond Terrace, Breck Road.
William Marshall, Esq., Penwortham Hall, Preston.

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* Transactions, p. 43. † Transactions, p. 99.

James Steains, Esq., 5, Upper Kensington.
Rees Woods, Esq., Manchester.

The following donations were laid upon the table :—

From the Society. Sussex Archæological Collections, vol. i. 2nd edition, 1853, and vol. vii, 1854.

From the Society. Proceedings and Papers of the Kilkenny and South East of Ireland Archæological Society, vol. i, new series, Nos. 2, 3, 4, 5.

From the Author. Lothian, its position prior to its annexation to Scotland, by John Hodgson Hinde, Esq., 1856.

From the Author. Additions and index to Miscellanea Palatina, by George Ormerod, D.C.L., F.R.S., &c.

From Mrs. Ann Maria Heaton, Edge-hill. A Map of Chester, 1643.

From T. T. Wilkinson, F.R.A.S. Two stones from Castercliffe, near Colne; one specimen completely vitrified from intense heat, the other partially burnt through.

The following interesting objects were exhibited :—

By Joseph Mayer, F.S.A. A Saxon ornament in gold, set with garnets and enamel in blue, red, and white, formed like a bird's head and neck.

A Saxon ornament found near Cologne, round in form, and 2½ inches in diameter, in gold, with raised collets or settings for receiving stones of which three were in place.

Two studs in silver, on which were the interlaced griffins or serpents usually found on crosses and other objects of Anglo-Saxon and Danish origin.

Numerous fibulæ of Roman, Merovingian, and other periods.

Also an object of much local interest, a pint mug made in Liverpool about the middle of the last century. It is of the usual white or cream-colour body, and on the front is a sort of chain ornament in which is inscribed in the same style as the ornaments (coloured or filled in blue,) "Ser William a Plumper." It was made at the time or soon after the celebrated election of 1761, when the potters were so numerous as to carry the election, most of them giving plumpers for Sir William Meredith, and thus placing him at the head of the poll. The mug had long been in the possession of the ffarington family, and was recently presented to Mr. Mayer by Miss ffarington, of Worden Hall, near Preston.

By Peter R. M'Quie, Esq. The eleventh collection of twenty-four views of remarkable remains of Abbeys, Castles, &c., in the county of Kent. Published by Nath. and Sam. Buck, April, 1736.

By Rev. Dr. Hume. A Maori figure, showing the postures adopted in various New Zealand war dances, and also the general pattern used in tattooing.

Mr. Mayer read a note which he had received from John M. Kemble, Esq., of Manchester, inviting him to exhibit his Anglo-Saxon and Celtic collection at the Art Treasures Exhibition, to be held this year in Manchester.

Mr. Wilkinson, F.R.A.S., gave some particulars respecting the two specimens from Castercliffe, which he had presented to the Society; and made a few observations upon some of the antiquities of the county.

The following Paper was then read :—

The Castle Hill of Penwortham,* *by Rev. W. Thornber,* assisted by the notes and illustrations of *Charles Hardwick, Esq.,* of Preston.

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* Transactions, p. 61.

8*th January*, 1857. LITERARY SECTION.

JOHN POOLE, Esq., in the Chair.

The minutes of the last meeting were read and confirmed.

The following donations were laid upon the table:—

From the Society. Journal of the Royal Geographical Society, vol. xxv. 1855. Proceedings of the Society, Nos. 3, 4, and 5.

From the Society. Transactions of the Philological Society, No. 14, for 1855.

Dr. Hume exhibited and described a volume which had been forwarded to him by Professor Rafn, of Copenhagen, entitled, "Inscription Runique du Pirée." It is written partly in French, and partly in Danish, and gives a translation in both languages of a Runic inscription on the body of a monumental lion, formerly preserved at the Pireus, but now removed to Venice. Numerous analogous inscriptions are given, from Denmark, and various other parts of the north.

The Secretary announced that he had received a large parcel of books as a present to the Society from the Royal Society of Northern Antiquaries, Copenhagen. At a future meeting he would lay them on the table.

Attention was called, by a member, to some portions of the annual address of the President of the Royal Geographical Society, the late Admiral Beechy; particularly those relating to the operations of the Liverpool Compass Committee, and the completion of the Ordnance Survey of Great Britain and Ireland.

The Paper for the evening was then read:—

ON THE LANGUAGE OF LANCASHIRE UNDER THE ROMANS,* *by R. G. Latham, M.D., F.R.S.*

15*th January*, 1857. SCIENTIFIC SECTION.

J. T. DANSON, F.S.S., V.P., in the Chair.

The minutes of the last meeting were read and confirmed.

Richard C. Naylor, Esq., of Hooton, late High Sheriff of Cheshire, having signified his wish to remain a member of the Society, was duly enrolled, in accordance with law xiii.

The following donations were laid upon the table:—

From the Society. Transactions of the Literary and Philosopical Society of Leeds. Vol. I. part i. 1837.
Annual reports for 1852-3, 1853-4, 1854-5, 1855-6.
An account of an Egyptian mummy presented to the Society by the late John Bloyds.

From the Society. Quarterly Journal of the Geological Society, Nos. 46, and 47. May and August, 1856.

From the Author. Report from the Mersey Inquiry Committee, by Joseph Boult, Esq., 1857.
An Inquiry into the position of the Old Lighthouse at Wallasey-Leasowes, and of the ancient village of Altmouth, by Joseph Boult, Esq.

From James Boardman, Esq. A copy, annotated by himself, of Mr. Mayer's paper on Roscoe and his influence on the fine arts. [*Transactions*, Vol. V. p. 142.]

Dr. Hume read a circular from the Mayor of Chester, as President, and from Mr. Wynne Foulkes, the Honorary Secretary of the Local Committee at Chester for receiving

* Transactions, p. 1.

the Archæological Institute from London. It was suggested that a Committee might be formed from among the members, to obtain objects for the temporary museum, suitable papers, &c. It was resolved unanimously, that the Council be authorised to take such steps as they may think right for the promotion of these objects.

Mr. Rundell exhibited a specimen card, on which he had constructed a diagram for giving by mere inspection the true bearing of the sun or other heavenly body, when its altitude and declination, or its hour angle and declination are known—intended for use at sea, for giving correct courses when the compass is affected by local attraction.

John Hartnup, Esq., F.R.A.S., gave some interesting particulars of the recent occultation of Jupiter and his moons, as seen by him through the great equatorial at the Liverpool Observatory.

The paper for the evening was then read :—

On the Importance of Testing Chronometers used at Sea, with Examples,* *by John Hartnup, F.R.A.S., V.P.*

5th February, 1857. ARCHÆOLOGICAL SECTION.

Peter R. M'Quie, Esq., in the Chair.

The minutes of the last meeting were read and confirmed.

Richard Watt, Esq., of Speke Hall, was duly elected a member of the Society.

The following donation was laid upon the table.

Vol. V. (1849) parts 3 and 4, VI. (1850), VII. (1851), VIII. (1852), IX. (1853), X. (1854), of the Journal of the British Archæological Association.

Among the objects of interest exhibited were the following :—

By Mr. Mayer. An almost unique chatelaine, being a Roman matron's bunch of keys, found at Colchester.

A number of fibulæ from Colchester and other places, chiefly of Roman workmanship, although some were supposed to be British.

By Mr. Blackmore. A medal of Sigismund, Emperor of Germany, on which he is designated the commander-in-chief of the Catholic forces. It was probably struck at the conclusion of the eighteen years' war, and after his death.

By Mr. Grazebrook. An antique couteau de chasse, and a poniard. Both were found in excavating the old Liverpool dock, now the site of the Custom House.

By Mr. M'Quie. A manuscript folio volume of some local interest, entitled "The Moore Rental," dated 24th February, 1667, and written by Sir Edward Moore, of Old Hall and Bank Hall in the county of Lancashire.

A very antique earthenware "salt-celler," said to have been used on the table of the first mayor of Liverpool.

A curious "syllabub mug," which in byegone years was passed round the table of the Moore family, each one imbibing a portion from the spout.

By Mr. A. R. Lingard. An interesting gold etwee case, a fashionable appendage to a lady's attire in the early portion of the last century ; also two curious marriage medals.

By Rev. Dr. Hume. Three gutta percha seals, one of Great Grimsby in Lincolnshire, the legend on which he described. He also exhibited two local seals, as examples of what are termed "canting arms," those of Brewton and Horncastle.

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* Transactions, p. 11.

The Honorary Secretary made some remarks on "The Moore Rental," and expressed an opinion that it ought to be purchased by the Town Council for the Free Public Library.

Mr. Mayer said the old "salt celler" was of Dutch or Delft ware. The syllabub-mug he thought was of Liverpool make.

The following paper was then read:—

On a Vortex Wheel near Kendal, with Suggestions on Water Wheels, *by G. Grazebrook, Esq., F.S.A.*

After glancing at the advantages of applying water power to agricultural machinery, where practicable, and its superiority over steam for this purpose, with a comparison of first cost and current expenses between the vortex wheel, a steam engine, and their equal in horses,—the paper gave a description of a vortex wheel on Mr. Thomson's patent, recently erected at Holmescales farm, near Kendal, the property of W. E. Maude, Esq. An account of the trial was referred to in the *Kendal Mercury* of 29th October, 1856. This wheel—10 inches in diameter, with a 30 feet fall through a 9-inch supply pipe—attains 60 revolutions per minute, with about 8 horse power, and works all the machinery of the farm. A full account of the principle was given by Mr. Thomson to the British Association in 1852, and will be found in the report for that year.

In the accompanying illustrations, for the use of the plates for which we are indebted to the British Association:—

A A [Plan and Section] is the water wheel, fixed on an upright shaft B. It is composed of a disc of thin iron, with vanes both on its upper and under sides (as shown to a larger scale in another part of the plate) carried in a certain distance towards the central boss:—this wheel occupies the centre of a strong cast iron case, C C, firmly bolted together by tie bolts P. The outer portion of this case is occupied by four guide-blades, G G, which direct the water tangentially on to the wheel. These blades fit close to the top and floor of the case, and can be moved by a spindle, K, with cranks, &c., so as to enlarge the exit and regulate the quantity of water admitted to the wheel. The water is introduced through entrances, F F, from the supply chamber, D D, [Section] (itself fed by E the supply pipe). In the Holmescales vortex this chamber is dispensed with, the supply being brought direct into the guide-blade chamber, which is made a little larger to admit of a rotatory motion of the water behind the roots of the guide-blades; also the blades are not moveable. The water having entered the wheel from between the guide-blades, passes through the vanes, and having expended its power escapes at the centre, which is left open both above and below,—where two annular pieces, L L, are fitted close to the orifice of the wheel. After passing out at this centre or vortex, the spent water runs away. M [Section] is the pivot on which the shaft works, and N a bridge to support the pivot; the whole case and its contents being sunk beneath the level of the tail race. The guide-blades are arranged to have such an orifice as only to allow the exit of half the supply, the remainder forming pressure in the supply pipe; and these proportions are found so correct that the full power is obtained, and the spent water is discharged in a state of rest. Mr. Thomson's later erections have been somewhat simplified, especially when applied to farm purposes. The advantages of the vortex wheel are:—1. Eighty per cent. of the power due to the water is secured—the greatest yet attained by any principle of water power. 2. Great regularity of speed, and economy of water 3. It is not affected by floods or ice.

Mr. Grazebrook then glanced at the history of the invention, and noted several erected by Mr. Thomson, especially one not yet completed near Ballyshannon, Co. Donegal, intended to work up to 150 horse-power, with a 14 feet fall.

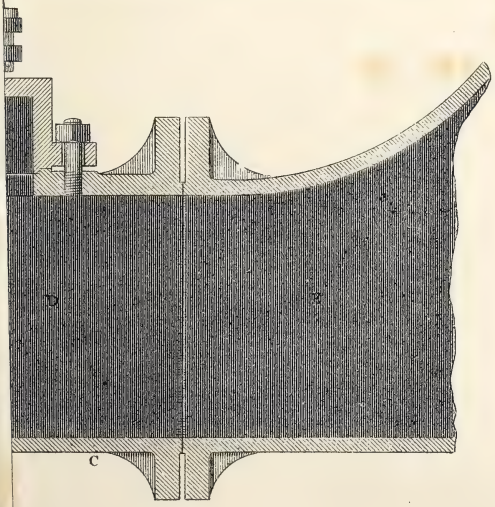
The suggestions on water wheels pointed out several ways in which the power of our old-fashioned undershot breast and overshot wheels might be eked out at trifling expense. In our village mills, the same faulty construction has been followed for centuries. Metal, which offers many advantages, will no doubt replace wood in the construction of new ones; but new principles should be applied as well.

TEX

Belfast.

Sectional Elevation

Water Level in the Tail Race



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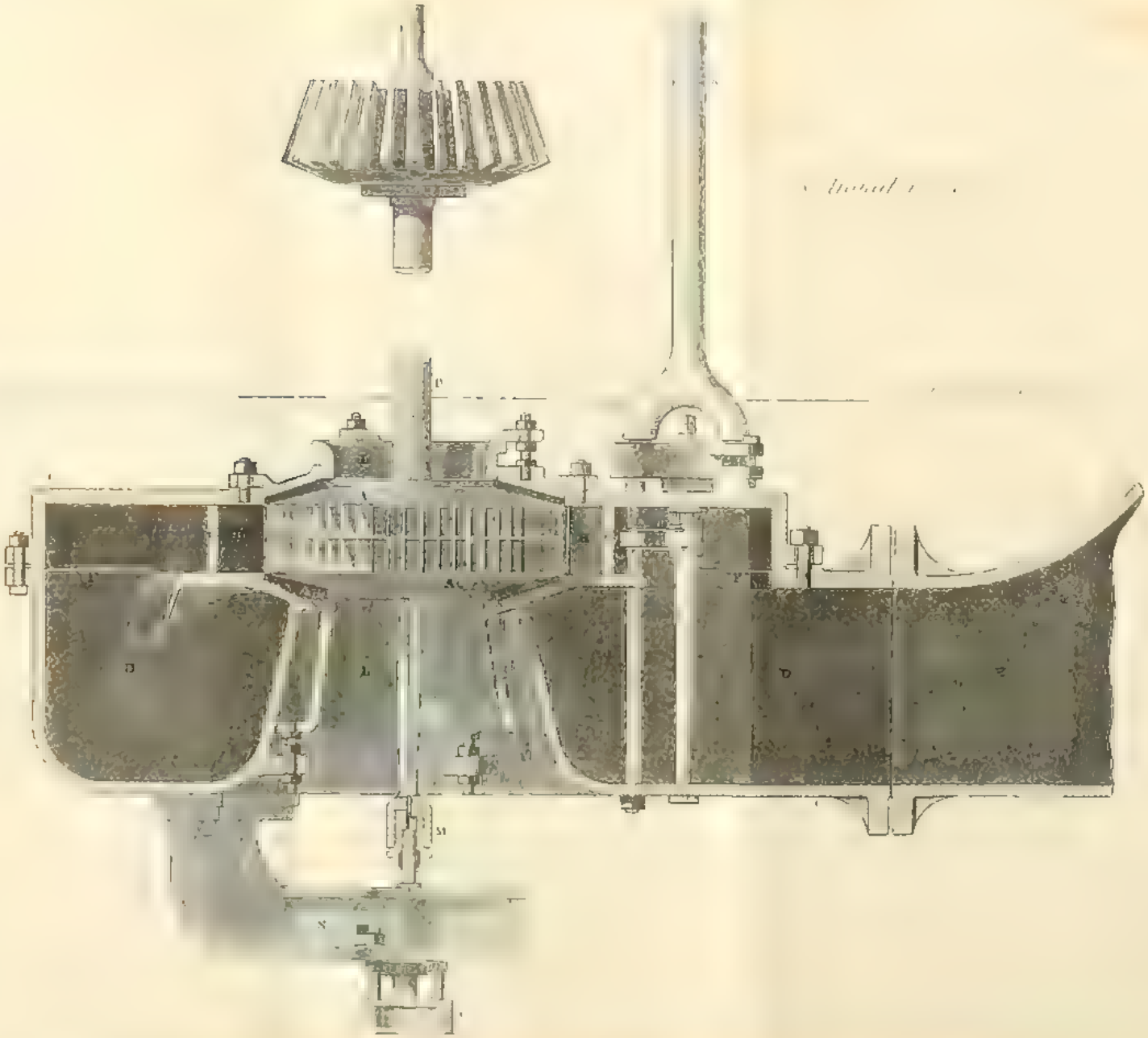
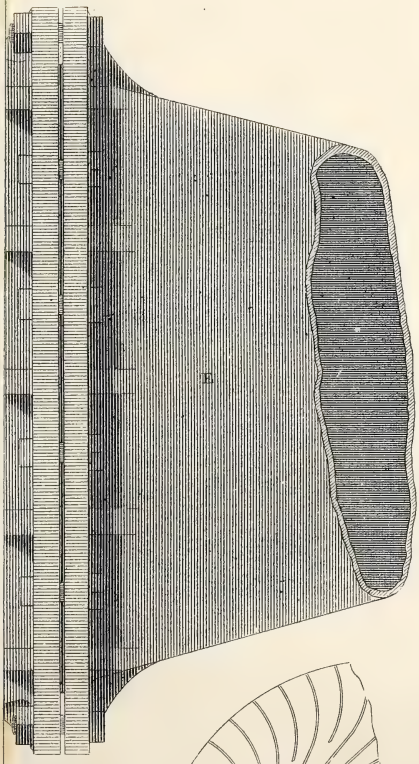
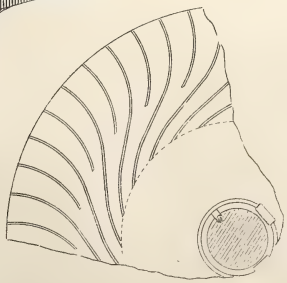
HIGH PRESSURE VORTEX



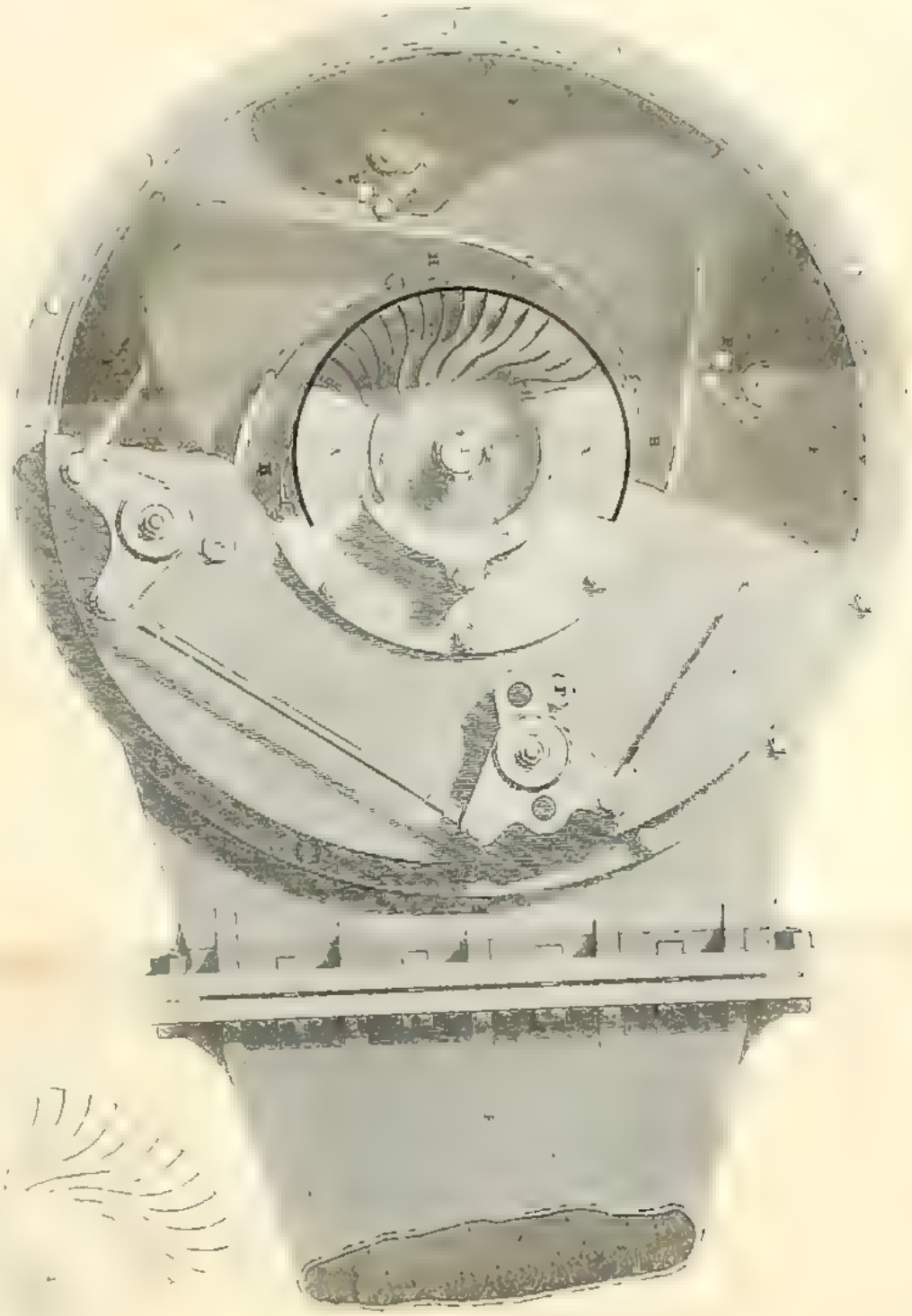
Plan





Part of the Wheel on a larger scale to shew the form of the vanes more accurately

4 Feet



The advantages arising from wheels working horizontally with perpendicular shafts were insisted upon, and various suggestions were made for decreasing the effect of friction in the supply pipes, and in placing them so that the column of water might produce a maximum effect.

In conclusion Mr. Grazebrook observes —

"The use of Turbines, to which general class Mr. Thomson's vortex belongs, is certainly the great modern discovery in water wheels. The best before Mr. Thomson's was known, was invented about thirty years ago by M. Fourneyron. His turbine works on a principle the reverse of Mr. Thomson's, viz.: from the centre out,—centrifugal instead of centripetal,—the water being directed by reversed guide-blades against the inside curve of the float-boards, which alone, like an annular strip of wheel, revolves. This wheel in its case is sunk below the surface of the tail race, and in some cases has worked up to 80 per cent., or even higher. There is one great fault, I think, in this wheel, viz.: the water strikes it inside, where, owing to the smaller diameter, the power is less, and the spent water is cast off at the outer circumference where the speed is greatest."

"This leads me to my last "suggestion," viz: "a wheel, made of an annular strip of fan-like floats closed in above and below, and surrounded by a circular supply case, fitted with guide-blades, which would cast the water on to the outer circumference; this case might be fed by three or four cone shaped tubes brought down a little out of the perpendicular, to give a greater rotatory motion to the water which might possibly be of advantage. The radii of the wheel would be made of a form to pass through the spent water with the least resistance, as the whole would be sunk beneath the tail race, and some spent water would escape above and some below. If, what I have before suggested, the principle of conical supply pipes, prove correct, it may be found better to enlarge this supply case, so as to have a free passage outside the roots of the guide-blades, and to bring the water on by one or two such conical pipes. Turbines made on this plan would, I think, possess several advantages, and a greater per centage of power than M. Fourneyron's, owing to the water acting on the outer circumference, where it would have more effect. Now M. Fourneyron's turbines have in some cases worked to as high a per centage as Mr. Thomson's vortex, and that with the manifest fault I have pointed out, and which is corrected in my suggested new turbine. I would ask engineers to look into this proposal. By applying their practical knowledge they might perhaps construct a wheel with the greatest per centage of power yet obtained."

Dr. Hume read a letter from Mr. Thomson, of Belfast, who had forwarded a model and drawings, to illustrate his invention and the paper for the evening. Some recent improvements were described, and the utility of lignum vitæ bearings for the submerged pivot.

12*th February*, 1857. LITERARY SECTION.

Rev. A. Ramsay, A.M., in the Chair.

The minutes of the last meeting were read and confirmed.

The following donations were laid upon the table.

From the Society. Proceedings of the Literary and Philosophical Society of Liverpool, No. 10, for Session 1855-56.

From the Author. Voyage à Constantinople, par M. Boucher de Perthes. Two vols. 1855.

From Mr. D. Lamb. The Athenæum for 1856.

From Mr. Johnston, Church Street. Five volumes Shakespeare's Plays, 1714. First Report of the District Provident Society, 1829.

From Mr. J. W. Whitehead. A curious Horse-bell, one of a set, from Gloucestershire.

The following objects of interest were exhibited :—

By Mr. Mayer. English Bards and Scotch Reviewers, by Byron, with Portraits and Autographs, and a variety of other illustrations.

By Mr. J. Boardman. The original MS. of an original poem by Mrs. Hemans, with an accompanying letter addressed to Miss Wagner, of Liverpool.

By Mr. George Grazebrook. A gutta percha model of a Brass Tablet, supposed to be an ecclesiastical decoration belonging to the shrine of some saint, now placed in the British Museum.

The Honorary Secretary announced that a committee of members of the Society had been formed to co-operate with the local committee at Chester, for the coming meeting in that city of the Archæological Institute.

In reply to a question by Mr. Buxton, he said the Council did not consider the time had yet arrived when the Historic Society could with propriety take notice of the munificent offer of Mr. Brown, (a member of the Society,) to the town of Liverpool. The subject had not been lost sight of, and at the proper moment action would be taken.

Mr. Grazebrook alluded to a rumour that some Saxon remains had been discovered at Wallasey, in removing the rubbish caused by the late fire.

The following Paper was then read :—

On Comparative Philology considered as an Aid to History.* *By the Rev. A. Ramsay, M.A.*

19*th February*, 1857. SCIENTIFIC SECTION.

J. T. Danson, Esq. V.P., in the Chair.

The minutes of the last meeting were read and confirmed.

Captain Robert Mather, of Finch House, was duly elected a member of the Society.

The following donations were laid upon the table :—

From the Society. Transactions of the Liverpool Polytechnic Society, January 1853, to May, 1856.

From George Grazebrook, Esq. A water-colour sketch of the present appearance of Wallasey Church.

From James Heywood, Esq., M.P., F.R.S., &c. A small medal commemorative of the Manchester meeting of the British Archæological Association, 1850.

From J. T. Danson, Esq., V.P. Camden's Britannia, by Richard Gough, second edition, with maps and plates, 4 vols. folio.

The following objects of interest were exhibited :—

By Eyre Evans, Esq. A magnificent volume, formerly the property of the late Mrs. Putland, of Paris, printed in letters of gold on vellum ; each skin surrounded by a broad border illuminated by hand. It was got up by Whittaker in 1816, and was dedicated to the Prince Regent, It contained " Magna Carta, Regis Johannis," occupying eleven skins, and " Consentio inter Regem Johannem et Barones," occupying two skins more. The marginal emblazonings contain the shields of the principal attesting Barons. The frontispiece is a beautiful portrait of King John. It was said that only four copies of the work had been got up in this style.

By Mr. R. Ready, of Cambridge. An interesting and extensive collection of Seals, consisting of Royal, Baronial, Episcopal, Conventual and Corporate Seals ; upwards of 1000 in all.

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* Transactions, p. 105.

The honorary Secretary laid some copies of the Catalogue of the Museum and Library upon the Table, and stated that as it was intended merely as the basis of a permanent catalogue, copies would be sent to those members only who applied for them.

Dr. Hume having announced the death of the Earl of Ellesmere, the following resolution was adopted unanimously:—

> "The Society being informed by its honorary Secretary of the death of the Right Honourable the Earl of Ellesmere, one of its members, which event has been made known in Liverpool this day, desires to take this earliest opportunity of recording the deep feeling of regret with which it learns the loss it has thus sustained, and its sense of the ability and kindness displayed by that nobleman in his connexion with the Society as its President for the period of six years."

The following Paper was then read:—

THE COMMERCE OF THE MEDIAL EAST.* *By John Locke, Esq., B.A., with illustrations.*

5th March, 1857. ARCHÆOLOGICAL SECTION.

REV. J. S. HOWSON, M.A., V.P., in the Chair.

The minutes of the last meeting were read and confirmed.

Thomas Carr, Esq., of Lower Bebington, was duly elected a member of the Society.

The following donations were laid upon the table:—

From the Archæological Institute. The Archæological Journal, Nos. 49 and 50, March and June, 1856.

From the Numismatic Society. The Numismatic Chronicle and Journal, vol. xviii. No. 4.

From the Author. History of the Parliamentary Representation of Preston during the last hundred years, by W. Dobson, Esq.

From Thomas G. Wedgwood, Esq. Epistolæ Ho-Elianæ, or familiar letters, Historical, Political, and Philosophical, by James Howell, 3 vols. in one, 1655.

From Lord Londesborough. Miscellanea Graphica. No. x.

From the Author. Arena Cornubiæ, or the claims of the Commissioners of Woods and Forests to the Sea Coasts and Banks of Tidal Rivers, by J. W. Pycroft, F.S.A.

From Mr. J. Mayer. Catalogue of specimens in the Museum of Economic Geology, illustrative of the Composition and Manufacture of British Pottery and Porcelain.

From Mr. J. T. Danson. Report of the Committee of the Wirral Agricultural Improvement Society on Weights and Measures used for the sale of Agricultural products.

From Mr. G. Grazebrook. Impression from Seal of the Free Grammar School of Darlington, 1561, with a likeness of Queen Elizabeth in a curious hooped dress.

From Mr. T. B. Ryder. Journal of the Manchester and Liverpool Agricultural Society.

The Rev. J. S. Howson exhibited a curious work illustrated by plates and charts, entitled "D. Paulus Apostolus in Mari, &c," by D. Ignatio Georgio.

Dr. Hume called attention to the arrangements which were being made by the Town Council for laying the foundation-stone of the new Public Library and Museum. It

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* Transactions, p. 119.

was thought some steps should at that time be taken to associate the Historic Society with the proceedings, and show its appreciation of the act.

It was moved by Mr. Danson, seconded by Mr. Steains, and resolved:—"That the Council be instructed to prepare an address for presentation."

The honorary Secretary then read some observations from the proof sheets of Mr. Hardwick's forthcoming History of Preston, to the following effect:—

(1.) *The Cuerdale "Find."* After describing the place and the general character of the objects, Mr. Hardwick quotes Lindsay's Analysis of the coins procured, and gives also the remarks of Worsaae, from his "Danes in England."

(2.) *Site of Brunanburh.* From an examination of the general evidence, a new site for Brunanburh is suggested, viz., Brownedge (formerly Ban-berg), beside Walton-le-dale, in the neighbourhood of Preston.

(3.) *Penwortham Castle.* After a notice of the fact that the Castle existed at the time of the Domesday Survey, and a description of the objects found in June 1856, the writer examines the theories which have been advanced to account for the existing facts. He thinks it possible that the hill may have been used in Saxon and even in Norman times as a "Mote Hill;" but that no erection of any importance occupied the position of the present Church at the bottom of the hill.

The following Paper was then read by the Author, and elicited a lengthened and interesting discussion:—

Result of an Examination of the Liverpool Tide Gauge Registers, for the Years 1854, 1855, 1856.* *By Lieut. Murray T. Parks, R.N.*

12*th March*, 1857. LITERARY SECTION.

David Buxton, M.R.S.L., in the Chair.

The minutes of the last meeting were read and confirmed.

George T. R. Preston, Esq., of Rock House, was duly elected a member of the Society.

The following Donations were laid upon the table:—

From the Society. Journal of the Ethnological Society, vol. iv., 1856. Regulations of the Society. List of the Society.

From the Society. Journal of the Statistical Society of London, vol. xix., part 4, Dec. 1856; vol. xx., part 1, March, 1857.
First Report of the Committee on Beneficent Institutions. 1. The Medical Charities of the Metropolis, 1857.

From the Society. Proceedings of the Royal Geographical Society of London, No. vi., January, 1857.

From the Author. An inquiry into the origin and authorship of some of the earlier Waverley Novels, by Gilbert J. French, Esq. Privately printed.

From the Author. Report of the Health Committee of the Borough of Liverpool on the Sewerage, Paving, Cleansing, &c. By James Newlands, C.E., Borough Engineer.

From Mr. T. Varty. A Photograph of Wallasey Church, taken before the late fire.

From Mr. A. Craig Gibson. Remnants of Rhyme by Thomas Hoggart, of Troutbeck.

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* Transactions, p. 223.

The following objects of interest were exhibited:—

By Mr. Blackmore. A crown piece of Mary Queen of Scots, in a superior state of preservation.

A medal commemorative of the Restoration of Charles II. date 1675, probably the work of the well-known die sinker Thomas Symon.

By Mr. A. Craig Gibson. A MS. volume of miscellaneous poetry by Thomas Hoggart, of Troutbeck, autographs, &c.

The following Paper was then read:—

Remarks on the Life and Writings of Thomas Hoggart, of Troutbeck. *By A. Craig Gibson, Esq.*

19*th March*, 1857. SCIENTIFIC SECTION.

J. T. Danson, F.S.S., V.P., in the Chair.

The minutes of the last meeting were read and confirmed.

Wm. Henry Grimmer, Esq., of 6, Castle Street, was duly elected a member of the Society.

The following donations were laid upon the table:—

From the Society. Report of the Proceedings of the Geological and Polytechnic Society of the West Riding of Yorkshire, vol. ii. 1842–'48; vol. iii. 1849–'55.

From the Society. Proceedings of the Royal Society, Nos. 21, 22, 23 and 24.

From Dr. Hume. Some papers relating to the Society of Arts, London.

Among the objects of interest exhibited were:—

By Mr. C. S. Gregson. Some extraordinary varieties of Lepidoptera found in the neighbourhood of Liverpool.

By Mr. Mosley, of the Magnetic Electric Telegraph Company. Specimens of the effects of the Electric storm of March 18th, on the Telegraph wires near Preston.

The following Paper was read:—

On the Lepidoptera of the Liverpool District, Part iii., with Observations on the Literature of this Branch of Natural History.* *By Charles Stuart Gregson.*

2*nd April*, 1857. ARCHÆOLOGICAL SECTION.

Joseph Mayer, Esq., F.S.A., in the Chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen were duly elected members of the Society:—

J. T. Towson, Esq., 47, Upper Parliament Street.
Rev. T. Newenham, B.A., Knotty Ash Parsonage.

The following donations were laid upon the table:—

From the Cambrian Archæological Association. Archæologia Cambrensis, Nos. 7 and 8, new series, for July and October, 1856.

From the United Societies of Northampton, York and Lincoln. Reports and Papers for 1850-1855.

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* Transactions, p. 165.

From the Author. A memoir on the Roman Garrison at Mancunium, and its probable influence on the population and language of South Lancashire, by James Black, M.D., F.G.S.

From the Author. A broadside letter on Roman Sepulchral Remains found in Ireland, by James Carruthers, Belfast.

From John Mather, Esq. Vols. xiii. and xiv. of Notes and Queries, also general Index for volumes i.–xii.

A pamphlet on Hyde and its neighbourhood.

Three Acts of Parliament and declaration of trust, relating to Liverpool Water Works, 1799, 1810, 1812-13.

Report on Laws relating to the Salt Duties, 1818.

A Bill for making a Turnpike road from Runcorn to Northwich, 1819.

From Joseph Mayer, Esq. The Catalogue of Works of Decorative Art selected from the Museum at Marlborough House for exhibition in Provincial Schools of Art.

From Joseph Guyton, Esq. Report on the improvement of the Rivers Mersey and Irwell between Liverpool and Manchester, 1840.

From Samuel Davis, Esq. A Bill of Lading dated 1760.

The following objects of interest were exhibited:—

By Captain Middleton. Two curious illustrated volumes relating to the Wars of the Reformation.

By Joseph Guyton, Esq. A coin found at Ribchester, a Roman Denarius of Titus.

By W. Henderson, Esq. The following ancient newspapers and other documents: *Observator*, 3 Nos., 1682; *The Tatler*, 2 Nos., 1710; *Spectator*, 3 Nos., 1712; *Old England*, 1743; *Morning Intelligencer*, 1782, 1783; *Morning Chronicle*, 1790.

A Letter from Mr. Burnett, apparently Steward to the Earl of Derby, then lately deceased, of April 30, 1703.

An Account handed in by Nicholas Fazakerley to the First Lord Molyneux, for the Easter and Trinity Terms of 1642; showing receipts for £862 4s. 2d., and disbursements of the same except £1 18s. 9d. The whole is receipted by Lord Molyneux. Among the items are several that refer to Liverpool, its leases, the petition of its people, and the patent of Charles I. to the citizens of London.

Nutter's views of Carlisle in the ancient time.

By Dr. Kendrick, of Warrington. A document entitled "Examination taken at Lancaster the 20th December, 1645, before the Committee for sequestrations there."

By Joseph Mayer, F.S.A. A large number of objects from his Museum to illustrate the paper for the evening.

The honorary Secretary read the draft of the Address to be presented to Mr. Brown, at the laying of the foundation-stone of the Free Public Library and Museum.

The Chairman announced the death, at Dublin, of Mr. J. Mitchell Kemble, the celebrated Saxon scholar. He dwelt on the regret which this had occasioned in all literary circles.

It was resolved—"That the sentiments of the Society be conveyed to the deceased gentleman's daughter."

The following Paper was then read:—

On the Faussett Collection.* *By John Robson, M.D., Warrington.*

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* Transactions, p. 85.

23rd *April*, 1857. MISCELLANEOUS MEETING.

JOSEPH MAYER, Esq., F.S.A., in the Chair.

[This meeting resembled the ordinary meetings of the Society in all except the presence of ladies, and a larger number of visitors than usual. It was like that held on the 13th of March, 1856, and referred to in the Annual Report.]

The minutes of the last meeting were read and confirmed.

The following were duly elected members of the Society.

The Earl of Burlington, D.C.L., F.R.S., Lord Lieutenant of the County, Holker, Kendal, and 10, Belgrave Square, London.

Lord Cavendish, M.P., Holker, Kendal, and 10, Belgrave Square, London.

The following donations were laid upon the table.

From the Society. The Somersetshire Archæological and Natural History Society's Proceedings, Vols. I. to VI. 1849 to 1855.

From the Society. The Quarterly Journal of the Geological Society, No. 49, Feb. 1857.

From the Society. Proceedings of the Royal Geographical Society of London, No. vii, Feb. 1857.

From the Society. Memoires de la Société des Antiquaires de l'Ouest. Vol. XXII. 1855.

From the Society. Bulletin de la Société Archéologique de l'Orleanais. No. 24, 1856.

From Rev. T. W. Banner. A political token commemorating the meeting of the allied powers in Paris, 1814, and the banishment of Napoleon Bonaparte to Elba.

By Exchange. (Mr. W. J. Herdman.) Ancient Liverpool, parts I. and II.

By Exchange. (Mr. H. Ecroyd Smith.) Reliquiæ Antiquæ Eboracences, or remains of Antiquity relating to the county of York, with illustrations by W. Bowman, Leeds, 1851. Six parts, 4to.

The following objects of interest were exhibited :—

By C. B. Worsnop, Esq. Twenty-five Photographs, by Thurston Thompson, of crystal cups from the Museum of the Louvre.

By Joseph Mayer, Esq. A great variety of Antiquities found at Hoylake.

Coins of the British period, and of the time of William III.

A vase made of clay, which had been taken from the foundations of the new Free Public Library. The workmen while excavating found an old slip-vat, the clay in which might possibly have been prepared as early as 1680. The body being of a coarse character, articles made of this clay were usually covered with a white glaze.

By Joseph Clarke, Esq., F.S.A. A glass bowl, discovered in draining a field in Essex, and exhibiting what is termed "pillar moulding," It shows that the Romans had made great advance in this manufacture. A patent for producing the same kind of moulding has been obtained at a comparatively recent date.

A glass vase also of Roman workmanship, remarkably thin and light, and evidently modelled from a pine cone; with this vase were found three Roman coins, two of Vespasian, and one of Trajan.

A small bronze figure of a youth.

A gold ring, with figure of Hercules in intaglio.

By Mr. James Boardman. (It being the anniversary of Shakspeare's birthday, as well as that of his death.) A cast of the mask of Shakspeare from the Stratford monument, coloured to imitate life, as is stated to have been the case with the original.

A medallion of Shakspeare in Wedgewood ware.
A copy of the folio edition of Shakspeare's works, printed in 1620.

The Chairman announced the death of Mr. John Mather, a member of the Council of the Society, and of Robert Bickersteth, Esq.

Resolved that their loss be recorded in the Proceedings of the Society, with suitable expression of regret.

The following papers were then read.

1. Remarks on Antique Ivory Carvings, *by Francis Pulszky, F.H.A.**

2. On the English Language, *by Thos. Wright, Esq., M.A.*†

7th May, 1857.—ARCHÆOLOGICAL SECTION.

Rev. Dr. Thom, in the Chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen were duly elected members of the Society:—

W. Horner, Esq., South Castle Street.
Rev. S. S. Frackelton, B.A., Bailieborough, Ireland.

The following donations were laid on the table:—

From the Society. Transactions of the London and Middlesex Archæological Society, Vol. I. part i.

From the Archæological Institute. The Archæological Journal, Nos. 51, 52. Sep. and Dec. 1856.

From the Society. Proceedings and Papers of the Kilkenny and S.E. of Ireland Archæological Society. Vol. II. New Series. No. vi. Nov. 1856. No. vii. Jan. 1857.

From the Editor. The Archæological Mine, Part 37, 1857.

From the Author. The Episcopal and Capitular seals of the Irish Cathedral Churches, illustrated by R. Caulfield, B.A., parts 3 and 4.

From Lord Londesborough. Miscellanea Graphica, Nos. xi. and xii.

From W. Peers, Esq. The Royal Tribes of Wales, by Philip Yorke, Esq.

From Richard Watt, Esq., Speke Hall. The bowl of a tobacco pipe of the 16th century, found in the ceiling at Speke Hall, during the recent alterations.

From B. Lupton, Esq. A volume of Pamphlets relating to Liverpool and its affairs.

From George Charles, Esq. A rubbing from the tomb of Walter Balcanquhall, D.D., an eminent divine of the 17th century, who died on Christmas-day, 1645.

The following objects of interest were exhibited:—

By Joseph Clarke, F.S.A., of Saffron Walden, Essex. A collection of bells, formerly attached to the gear of horses, some of them of Roman make. A collection of keys, of various forms and ornament, chiefly mediæval, found in the county of Essex.

By Joseph Mayer, F.S.A. A great number of glass beads of various colours, forms, and sizes, showing the knowledge the Romans had of the art of glass making, and of the various ingredients requisite to give colour to the beads.

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* Transactions, p. 247. † Transactions, p. 143.

By George Grazebrook, F.S.A. The first edition of Camden's Britannia, published by Radulph Newberry, London, 1586.

By Rev. Dr. Hume. A copy of a Latin inscription made by Captain Moxon, at Malacca. Beneath the floor of a ruined Church lies buried, Peter, second Bishop of Japan, who died in February, 1597.

The Honorary Secretary announced that the Annual Excursion of the Society would be to the Art Treasures Exhibition at Manchester.

The following paper was then read:—

THE PEOPLE OF THE ENGLISH LAKE COUNTRY: * THEIR ORIGIN, HISTORY, AND CHARACTER, *by A. Craig Gibson, Esq.*

Also a portion of the following paper:—

THE HOYLAKE ANTIQUITIES, *by Rev. A. Hume, D.C.L.* †

14*th May*, 1857.—LITERARY SECTION.

J. T. DANSON, Esq., V.P., in the Chair.

The minutes of the last meeting were read and confirmed.

The following donations were laid upon the table:—

From the Royal Society of Northern Antiquaries (Copenhagen.) Antiquariat Tidscrift, &c., &c., 3 vols. 1846-48, 1849-51, 1852-54.
Memoires des Antiquaires du Nord, 3 vols. 1840–44, 1845–49.
Antiquitates Americanæ, 4to. in three languages.

From the Author. History of the Parochial Church of Burnley, by T. T. Wilkinson, F.R.A.S., 1856.

From the Author. Preston in the Olden Time, by W. Dobson, 1857, two copies.

From the Author. Table Talk in the Olden Time, by James Boardman, 1856.

From the Author. Poems Sacred and Miscellaneous, by Henry Grazebrook, Liverpool, 1852.
Sir Geoffrey and other Poems, by Henry Grazebrook, 1857.

From the Translator. Literary Fables from the Spanish of Yriarte, by Robert Rockliff, Liverpool, 1854.

From Edward Heath, Esq. Several Financial Reform Tracts.

From the Committee of the Liverpool Library. Catalogue of the Liverpool Library, complete to 1857.

From Dr. Macintyre. The Laws and Regulations of the Liverpool Lyceum Institution, as printed in the years 1807, 1849, and 1856; also a medal used for many years by members of the Society, as a token of membership.

From Mr. Angus. A photograph of the small bronze figure of a youth, exhibited by Joseph Clarke, Esq., at the last meeting of this Society.

The following objects of interest were exhibited:—

By Mr. A. Craig Gibson. An antique carving in wood, probably the lid of a chest

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* Transactions, p. 181.

† This paper will appear in an extended form, with illustrations, in the next volume of Transactions.

or trunk, representing, in the centre, the crucifixion, and round the border, in twenty-four compartments, scenes from the life of Christ.

By Mr. Joseph Mayer, F.S.A. A magnificent specimen of gold "ring money," found in Ireland. If money, it is the heaviest coin yet found, being 18 oz. 10 dwts. in weight, and worth £77 12s. of our present currency.

An indenture deed of the time of King Charles, having the name of "honest" Isaac Walton, attached as a witness.

A terrier, or account of all the lands, houses, and other property belonging to Christ Church College, Cambridge, and a MS. or vellum written about the end of the 15th century.

By Mr. D. Buxton. Two coins found at Palermo, supposed to be Saracenic.

By Mr. Blackmore. A medal of Dr. Priestley, date 1783, having his bust on one side, and a pneumatic trough and various pieces of chemical apparatus on the reverse.

Mr. Mayer exhibited a set of illustrations of gold and silver ring money, personal ornaments, and "pre-Christian" torques, all of which are in the possession of Sir Thomas Tobin, F.S.A., of Ballincollig Castle. These comprised the following :—

(1) *Bronze.* A finely patinated Brooch, from Ballitore, County Kildare.
(2) *Silver.* A Bracelet, or ring-money, from the north of Ireland.
(3) *Gold.* A Bracelet, or "ring-money," from Ahinagh, County Cork.

A "halse-ring" or collar, supposed also to have been used as ring-money. It is beautifully ornamented in front.

Five specimens of ring-money; two of which were probably used as bracelets, and the others as ear-rings.

Two "fibulæ" with broad cusps at the extremities.

Flat collar, from Bailieborough, County Cavan: engraved round both inner and outer margins with simple patterns, parallel, checked, and indented.

Large and beautiful gold torque from Mangerton, County Kerry. It is engraved on the outer and inner margins at the centre, and across the whole surface at the horns. The latter patterns are tastefully grouped, consisting of radiating bands composed of bandlets shaded alternately, and with serrated edges. The former embrace indentations, checks, parallel waves, &c., in great variety.

[*See the four plates subjoined.*]

The following papers were then read.

AN HISTORICAL SKETCH OF THE LIVERPOOL LIBRARY,* *by P. Macintyre, Esq., M.D.*

THE GROWTH OF THE POPULATION OF LANCASHIRE DURING THE FIFTY YEARS, 1801 TO 1851,† *by J. T. Danson, V.P., and T. A. Welton, Esqrs.*

21*st May*, 1857.—SCIENTIFIC SECTION.

T. SANSOM, Esq., A.L.S., in the Chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen were duly elected members of the Society :—

Edward Bean, Esq., Revenue Buildings.
John Cheetham, Esq., M.P., Eastwood, Staleybridge.
F. A. Clint, Esq., 14, Dale Street, and 2, Beech Terrace.
Hon. Sir Cresswell Cresswell, 21, Prince's Gate, London.

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* Transactions, p. 235. † Transactions, p. 195.

Charlton R. Hall, Esq., 40, Everton Terrace.
Francis Haywood, Esq., 7, Exchange Buildings, and Edge Lane Hall.
Lewis Hornblower, Esq., Clarendon Buildings, South John Street.
Hamilton Hume, Esq., Cooma, Yass, New South Wales.
James R. Jeffery, Esq., 43, Church Street, and 11, Lodge Lane.
Joseph Kitchen, Esq., Exchange Court, Exchange Street East.
Charles Mozley, Esq., 125, Mount Pleasant.
David Hudson M'Nicoll, M.D., Southport.
A. C. Stewart, Esq., Union Buildings, 16, North John Street.
John Angus Ward, Esq., Hooton Lodge, and Water Street.

Samuel Hill, Esq., was re-enrolled a member on paying his subscription from the time of his temporary withdrawal from the Society.

The following donations were laid upon the table:—

From the Society. Proceedings of the Royal Society, Vol. VIII. No. 25.

From the Society. Proceedings of the Royal Geographical Society, No. viii. March, 1857. Journal of the Royal Geographical Society, Vol. XXVII. 1856.

From the Society. The Quarterly Journal of the Geological Society, Vol. XII. part 4, 1856.

From the Society. Journal of the Geological Society of Dublin, Vol. XII. part 3, 1856.

From the Society. Transactions of the Dublin University Philosophical Society, Vol. VI. 1854.

From the Society. Transactions of the Cambridge Philosophical Society, Vol. IX. part 4.

From the Society. Proceedings of the Liverpool Architectural and Archæological Society, Vol. II. part 2.

From the Society. Report of the Liverpool Royal Institution, 1857.

From the Town Council of Liverpool. Report on the Police Establishment and the state of crime in Liverpool, with tabular returns for the first nine months of 1856-1857.

From T. T. Wilkinson, F.R.A.S. The Ladies' and Gentlemen's Diary, or Poetical and Mathematical Almanack for 1857.
On the origin and investigation of Porisms, by Mr. John Playfair, Edinburgh.

From Mr. Keith. Six Photographs commemorative of laying the foundation-stone of the New Free Public Library.

By Exchange. (Mr. Herdman.) Ancient Liverpool, part III.

The following objects of interest were exhibited:—

By Joseph Mayer, F.S.A. A gold ring, found in digging about the roots of a plum tree at Hoylake. It is of the time of Elizabeth, and set with a diamond of the pyramidal form, common at that period. Inside the ring the following letters are engraved, S. T. D. Æ.

By Edward Benn, Esq. Four daggers made of bronze, one of steel, and a stone implement supposed to have been used for making nets; also a karrane or shoe, made of a plain piece of leather sewn up the front and back so as to fit the foot.

By George Grazebrook, F.S.A. Two illuminated missals, one of the early fifteenth and the other of the end of the same century.
Several bronze and silver mediæval seals.

By Miss Head, Bootle. Howell's History of the Bible, printed at Manchester in 1738, and containing several plates.

By Mr. Henderson. A Spanish Bible, printed in 1569. A presentation copy from the translator, Cassiodorus Reimus, 1588.

By Mr. James Reay. Preston in the Olden Time, by W. Dobson, 1857.

By Mr. James Boardman. Mementos of Roscoe. 1. View of Old Bowling Green House. 2. New Bowling Green House. 3. Allerton Hall.

By Mr. Keith. A miniature photographic copy on glass of six 4to. pages of writing, being a paper read before the Photographic Society.

The papers for the evening were:—

1. A Visit to the Tomb of Theodoro Paleologus,* *by J. T. Towson, Esq.*

2. The Characters of Macbeth and Richard the Third, according to Shakspeare, compared,† *by James Stonehouse, Esq.*

3. On the Perfect r–Partitions of r^2—$r+1$,‡ *by Rev. T. P. Kirkman, A.M., F.R.S.*

4. Address at the Close of the Third Triennial Period of the Society's Existence, *by Rev. A. Hume, D.C.L.*

Concluding Address. *By the Rev. A. Hume, D.C.L., Honorary Secretary.*

In complying with the request of the Council, to address to you a few remarks at the close of another Session, my task is on the whole an easy and agreeable one. I might quote the proceedings, not yet closed, of this very evening; probably without a parallel at any time in the two counties. On this last evening of the Session, we elect fourteen new members, one of whom has read our Transactions with interest at the Antipodes; and we restore another to the roll who will thus obtain the volumes for Sessions VIII and IX. New donations come in to the last moment, and numerous objects are forwarded to us for exhibition. We have four papers also;—one on Archæology, one on Literature, one on Science, and one of a miscellaneous character. Of the writers, two are members of the Society and two are not.

There have been eighteen Sectional meetings, two Miscellaneous, and the Annual General meeting,—in all twenty-one. At these twenty-nine papers have been read;—eight on Archæology, nine on Literature, nine on Science, and three of a miscellaneous character. The authors have been twenty-four in number; of whom it is interesting to see that so many as one-third are unconnected with the Society; while of the remaining two-thirds, fourteen are ordinary and two honorary members. The papers have been in general of a higher character than usual; so that the Council will feel some difficulty in doing justice to all, and yet restricting their volume within convenient limits.

The donations received during the Session have made some interesting and valuable additions to both portions of our collection. The most interesting of the miscellaneous objects by which our Museum has been enriched, is the large and beautiful guidon presented by Mr. French of Bolton. The gift was suggested on the occasion of our Excursion to Preston last summer; and on all future occasions of that kind, it will be a becoming and characteristic object. Our Library has been increased by about one hundred volumes of donations, so many as seventy being from other learned Societies with which we maintain friendly relations. The continuous portions of such publications, and the separate pamphlets received, would be equivalent to about twenty volumes more.

In connexion with this subject it may be noticed that the Catalogue of our collection, extending over thirty-six pages, has been printed and issued; and that a large number of volumes has been bound and put in perfect order. The whole collection is at present accessible to the members. Hitherto, the collection has not been a very important feature of the Society, but the intention is that it shall be so. With a due amount of attention and care, its value may increase very rapidly.

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* Transactions, p. 213. † Transactions, p. 227. ‡ Transactions, p. 127.

The number of members added to the roll during the Session, including this evening, is a satisfactory evidence of the firm position which the Society has already attained. At the commencement of the Session, I ventured to anticipate an increase of forty to supply the usual vacancies and to add to the standing number; and my expectations have been much more than realised, as we have enrolled sixty-three. These include the Lord-Lieutenant of the County, a Bishop, a Judge, several members of Parliament, and others of distinction for their social position, public usefulness, or high attainments. Viewed locally, twenty-nine are resident, and thirty-five non-resident. So many as fifty-nine were elected in the usual way; three were enrolled without election or entrance fee, as they had been Vice-Presidents by right of office; and two who had resigned were restored again, each paying his subscription from the point at which he had left off.

To place this number in its proper light, it ought to be stated that learned Societies have at several times existed in Liverpool whose entire members have not reached sixty-four. Yet they did not profess to be private clubs; but claimed attention as institutions with public characters and objects. The oldest Society in the town had only fifty-six members during its first session; it was occupied nearly eighteen years in enrolling sixty-four new members; and it was about twenty sessions old before its entire list comprised that number.

During the past Session, the Society gave expression to its views in reference to the munificent offer of an individual to present a Library and Museum to the town; and the President and members had the gratification to see that the mode in which they expressed their sentiments was adopted by several other public bodies. Perhaps I may be allowed to say in connexion with this subject, that I had the honour to advocate the establishment of a public Library in Liverpool on the 1st of February, 1848;—more than two years before Mr. William Ewart's first Bill on the subject had passed, and two years and a quarter before the first motion on the subject had been made in the Town Council.

The results of a single Session, however, though gratifying as in the present instance, must be expected to be generally uniform, and therefore seldom presenting points of peculiar interest. A provincial Society, cultivating the whole field of intellectual inquiry, cannot be expected to give an annual statement of the position of knowledge in its several departments; especially as there are Metropolitan Societies which do that work specially and in detail. And on the other hand, a mere analysis of the papers read would be comparatively useless; for any intelligent reader can see it for himself, at a glance, in the Table of Contents. At the present moment, however, we have reached the close of another triennial period; and it is in recollection of the more formal statements delivered on two previous occasions, that these remarks have been requested by the Council.

During three Sessions we have existed in our enlarged condition; during that time only have we practically cultivated science; or worked in sections; or made a distinction between resident and non-resident members; or met within these walls; or published an enlarged volume; or made its annual issue indispensable; or cultivated extended relations with other Societies. At the close of the sixth Session, there were 340 members connected with the Society, at the close of the ninth there are about 470. At that time, the idea of a large Society working in sections was considered practicable, provided two or more of the existing ones united to form its nucleus; the plan is in successful operation at this moment, from our own materials exclusively. We ventured then to hope that a Society with 500 members might eventually be called into existence; we now know, that whenever we consider the effort worth being made, we can raise our own Society to 500 in a single Session.

From the first hour, our Society included Scientific subjects, but only so far as they applied to the district. Indeed it only included Literature and Archæology to the same limited extent; but as the laws of nature and their application in the arts, have generally very little of a local application, in practice we declined papers on Science in favour of those Societies which gave it more prominence. This led to several erroneous inferences, e.g. that the Society was for six years merely Archæological, (in theory as well as in

practice), that we had no Scientific members, and that our attempts in that section would be unsuccessful. The following analysis, therefore, is not without interest to the members. During the three Sessions, we have had twenty-six papers in the Section of Science; and of these, six have been on Zoology, two on Botany, one on Physical Geography, four on Practical Mechanics, one on Geology, three on Mathematics, four on Meteorology in theory and practice, two on Optics, two on the higher department of Ethnology, and one on the application of Chemistry to the Arts. The papers on Archæology and Literature have also been very varied, but they need not be examined so minutely.

It is proper to state, however, that our position is not one of our own seeking; but that the result was brought about by causes external to us. To these it is now unnecessary to allude. We believed, naturally enough, that in a town where a Learned Society,—using the term in a high sense,—had scarcely existed, a union of existing elements was indispensable to success; but the result has shown that this was a mistake. In the triennial addresses delivered in 1851 and 1854, the propriety of this course was suggested; but the question has now been set at rest, in a manner most satisfactory to us. Farther, it can never be re-opened on the same grounds;—for the end has been gained already, and the proposed means are therefore obsolete.

In short, our duties are now clearly defined; we have an ample supply of competent labourers; our detailed operations have in almost everything assumed a permanent form, to constitute future precedents; and our means are amply sufficient to secure the ends. A Society in this condition, and able in an ordinary Session to enrol 63 desirable members, has little to fear if it be only true to its great principles and declared objects.

SIZE OF ORIGINALS.

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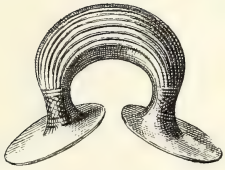
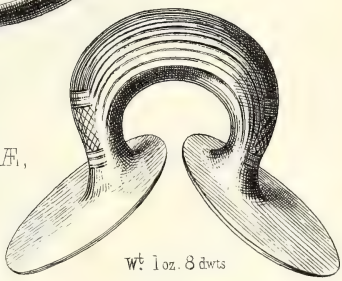
GOLD RING MONEY.
Wt 25 dwts. 20 grs.
Found 7th June 1850.
At Ballyleedinish near Dunmanway, Co. Cork



Wt 5 dwts. 19 grs.

GOLD FIBULÆ.

Found July 1856,
in draining a field near Baileyborough,
Co. Cavan, Ireland.



Wt 1 oz. 8 dwts

Wt 12 dwts. 4 grs.

Wt 6 dwts. 4 grs.

Wt 2 dwts 10 grs.

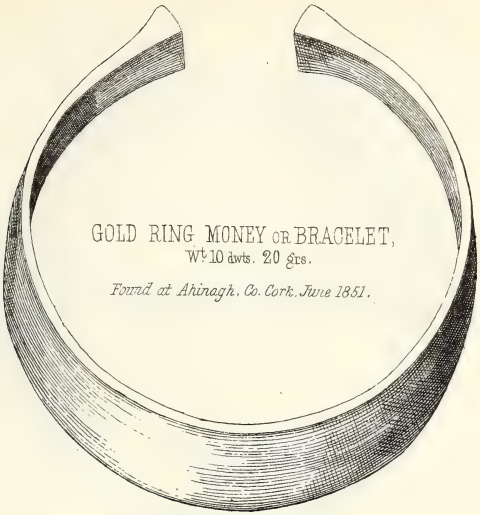
GOLD RING MONEY.

GOLD RING MONEY,
Wt 2 oz. 1 dwt.
Found at Ahinagh, near Macroom, Co. Cork, 1848.

SIZE OF ORIGINALS.

In the possession of SIR THOMAS TOBIN, F.S.A.
Ballincollig, near Cork.

Moore lith. Cork.

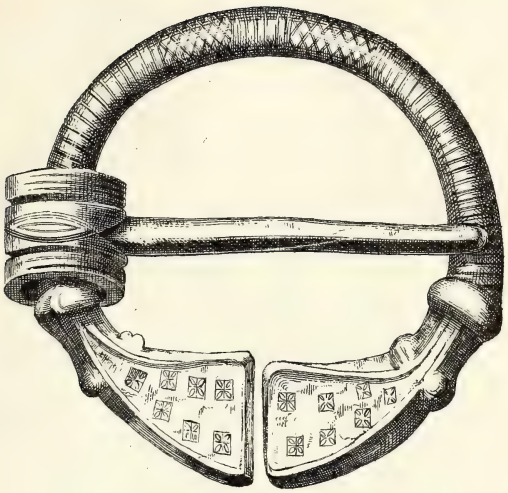


GOLD RING MONEY OR BRACELET,
Wt 10 dwts. 20 grs.
Found at Ahinagh, Co. Cork, June 1851.

GOLD RING MONEY,
Wt 1 oz. 10 dwts.
Found in the Co. Waterford, 1856.

SIZE OF ORIGINALS.

In the possession of SIR THOMAS TOBIN, F.S.A.
Ballincollig, near Cork.



Finely Patinated
BRONZE BROOCH.
Found July 1856,
Near Ballitore, Co. Kildare.

SILVER RING MONEY OR BRACELET,
Wt 3 oz.
Found in the North of Ireland 1856.

SIZE OF ORIGINALS.

In the possession of SIR. THOMAS TOBIN, F.S.A.
Ballincollig, near Cork.

Mitchell Lith. Cork.

APPENDIX.

27*th November*, 1856. EXTRA MEETING.

Conversazione at the Egyptian Museum, Colquitt Street.

By the invitation of the proprietor, Joseph Mayer, Esq., F.S.A., an extra meeting was held here, when a large number of members and their friends attended.

The Company were received in the room devoted to Anglo-Saxon and Medieval Antiquities; they then partook of coffee and other refreshments, and were afterwards conducted to the Mummy Room.

Here Mr. Mayer gave a brief account of embalming, and pointed out the chief objects in the collection. In respect to the Egyptian remains he observed, that a singular and interesting feature of their antiquities was to be found in the similarity of the emblems and devices by which the mummy cases were ornamented. These similarities are to be observed historically until the Egyptians ceased to be a nation. After the Greeks occupied the country their forms of monumental decoration were mixed with the Egyptian; but to all scholars it was obvious how small and how slow were the adaptations of Greek forms. The Greek innovations were traceable in a changed method of embalming, but still the strongly-marked peculiarities of Egyptian art and feeling maintained their supremacy. Another remarkable feature connected with Egyptian Archæology, is the absence of early pottery. It is true that specimens of pottery are sometimes found, but none showing a rude state of the potter's art. The commoner vessels in use in Egypt were made of alabaster; those of pottery which have reached us are of a very advanced character. The evidences of their skill in working alabaster, are numerous, and interesting.

Mr. Mayer then conducted his guests to the room containing Egyptian, Greek, and Etruscan personal ornaments and jewellery. This collection is particularly rich, and by reference to particular specimens, the various stages of progress in the glyptic art were illustrated.

After the rooms containing the Saxon collection, (known as the Faussett collection,) had been visited, and its contents explained, the company were taken through the valuable and extensive collection of Etruscan and Roman pottery, and thence into the Amoury, and to the room devoted to the exhibition of modern porcelain. In this last there is a large collection of Raphael ware, with specimens of all the manufactories of porcelain in Europe, from the discovery of the art to the present time, and of what to an English eye is even more pleasing, the triumphs of Wedgwood in the ceramic art. Here are specimens of all the stages by which that eminent manufacturer arrived at perfection, from the inimitable jasper panels, enriched with classic cameos, to the matchless copy of the Portland vase. Mr. Mayer, in describing this celebrated model, corrected the common impression that Flaxman had been employed upon it, and stated that he had documents in his possession in proof that the artist was named Hackwood. Before leaving this department, he contrasted the different circumstances under which the Sevres porcelain and that of Staffordshire were produced. The one is well made, and ornamented in a manner to meet the eye of the most fastidious, and yet at a comparatively small cost; the other from its great expense is only to be purchased by princes. In connexion with this subject, he remarked that Liverpool held an early and honourable position. In fact, here the art of Pottery first developed itself, and was carried to a very high state of perfection. Here porcelain was first made in England, and the art of ornamenting it by the aid of copper-plate printing first known; and here the best and earliest encaustic tiles

A reference to this meeting appears in the English Notebooks of Nathaniel Hawthorne (ed. Randall Stewart, 1941, p. 457).

were made. Up to the period when Minton did so much to advance this branch of the art, nothing had been achieved equal to the Liverpool manufacture. At Herculaneum also, in this immediate neighbourhood, excellent pottery had been manufactured.

The entire company having descended to the reception room, Mr. Mayer expressed before their departure, the great pleasure which he experienced in having the members of the Society present with him, as his guests and fellow-students of antiquity.

Dr. Robson complimented Mr. Mayer on his liberality, and the taste he had displayed; and concluded by proposing the thanks of the gentlemen present.

Dr. Hume, especially on behalf of the Historic Society, seconded the motion which was at once adopted unanimously;—and the meeting separated.

4th December, 1856.—SPECIAL GENERAL MEETING.

J. Towne Danson, F.S.S., V.P., in the Chair.

(Held half an hour before the usual Ordinary Meeting.)

The Chairman stated the object of the Meeting, and read the notice convening it.

Mr. Mayer proposed that a Diploma of Life Membership be presented to David Thom, D.D., Ph.D., in acknowledgment of his long connexion with the Society as a Vice-President, and an active member of the Council since its commencement.

Dr. Hume seconded the proposition, and mentioned some particulars of Dr. Thom's interest in the Society.

After some remarks from Mr. Peter R. M'Quie, Dr. Macintyre, and the Chairman, the Resolution was put and adopted unanimously.

15th April, 1857. SPECIAL GENERAL MEETING.

A Special General Meeting of the Society was called for the purpose of presenting an address to William Brown, Esq., M.P., at the usual place of meeting, in St. George's Hall, on the morning appointed for laying the foundation-stone of the Free Public Library and Museum.

It was afterwards arranged to present the address at the Town Hall; where the Society attended in its official capacity. This arrangement was adopted for the public convenience; as other public bodies were desirous to present Addresses at the same time. An elevated dais was occupied by Samuel Holme, Esq., deputy Mayor, and William Brown, Esq., M.P. The various Deputations were introduced by James A. Picton, Esq., F.S.A., Chairman of the Library and Museum Committee;—the Historic Society being first in order.

The President, Major-General the Hon. Sir Edward Cust, K.C.H., D.C.L., commenced the proceedings with some remarks in reference to the occasion of the meeting and the general business of the day, and then called on the hon. Secretary, Dr. Hume, to read the following:—

Address

"To William Brown, Esq., M.P.

Sir,

You this day lay the foundation stone of a building, to be devoted to a Free Public Library and Museum; and you have also, with a spirit worthy of so good a cause, signified your intention to erect it exclusively at your own cost.

We might, on *general* grounds, congratulate the public and ourselves as the recipients of such a noble gift; and any body of men might, with much propriety, tender to you their grateful acknowledgments. But the Members of the Historic Society of Lancashire and Cheshire feel that they have a peculiar right to do so. It is their pleasing duty to record facts of interest respecting this part of the country, and to cultivate an extended intellectual spirit; their meetings are held within the walls of St. George's Hall; the Society has itself collected a Library and Museum for the use of its own members; and a place of deposit has been promised for this collection as soon as sufficient space can be spared in the public Museum of the town.

It affords the highest gratification to every person in this great community, to see one of its members spontaneously producing from his abundance such a valuable and suitable offering for the benefit of the public at large. It is particularly gratifying to this Society, that one who has been enrolled among its members from the first, and who occupies a prominent official place within the area of its operations, should afford such material aid to the intellectual objects which it labours to promote. Nor can it be less satisfactory to yourself, to witness the high appreciation of your generous conduct, as evidenced by the enthusiastic and grateful recognition of all sections and grades of society.

We regard the principal ceremony of this day, as initiatory in more senses than one. We trust that it will induce many others of our "Merchant Princes" to emulate so good an example; and we rejoice to see facilities for completing the education of our ordinary schools, as well as for carrying general intelligence to lower grades of the community. We foresee, in the new erection, the appropriate home of some of our Societies and Institutions, for Literature, Science, and the Arts; and we look forward with hope to its affording valuable aid towards a higher class of Education than any that Liverpool yet posseses.

May you be spared to witness length of years and years of happiness, and to see amid the praise and honour of young and old, the valued fruits of the beautiful tree which you this day plant among us."

Reply

"To the Members of the Historic Society of Lancashire and Cheshire.

Gentlemen,

So totally unexpected are the honours which my fellow-townsmen are conferring on me,—for my desire in some slight degree to aid and promote their onward progress in acquiring knowledge of the useful arts of life,—that it exceedingly embarasses me to find suitable language to express my feelings; particularly to the Historic Society, of which I have been, I fear, an unworthy member.

My only apology is, that I have not time at my command, or that knowledge which would enable me to make myself useful in fishing the inexhaustible preserves of antiquarian lore which is so extremely useful in verifying and correcting many important parts of History. Therefore, all I can do is to try to mend, and extend the net in some slight degree; that you may have a greater power of withdrawing more and more from those preserves, the treasures which they yet contain. In this duty I consider that we are all called upon to assist.

No one can appreciate more than I do your useful labours,—in all your three chosen lines of inquiry, Archæology, Literature, and Science,—and I can assure you that I am much gratified at your desiring to present me such an address, couched as it is in language most flatteriug.

To be considered the associate of such a Society gives me position and rank amongst my fellow-men, and this is a great stimulus to make myself worthy of such a position.

Gentlemen, permit me, in conclusion, to thank you sincerely for the honour you have conferred upon me."

[Both the Address and Reply were beautifully emblazoned on vellum, and mounted in handsome frames. The latter is preserved in the Society's Library.]

27th June, 1857. SPECIAL GENERAL MEETING.

Excursion to Manchester.

On Friday the 27th of June, the Annual Excursion of the Members and their friends took place, to the Art Treasures Exhibition at Manchester. The party, which consisted of about 200 gentlemen and 100 ladies, left Liverpool at half-past nine a.m., and proceeded by Birkenhead Chester and Warrington.

At the entrance to the Exhibition, they were met by several other members, resident in Manchester and the neighbourhood; and for about two hours the party separated into numerous private groups for the more convenient examination of different portions of the Exhibition. After one o'clock, a large number were conducted through the Gallery of Paintings by Ancient Masters, and the principal characteristics were pointed out by George Scharf, Jun., Esq. Conversational explanations were also given to similar parties, in the Gallery of Modern Portraits, by James Crossley, Esq., F.S.A., and in the department of Antiquities, by Mr. Chaffers, Mr. Mayer, and Dr. Bell.

At half-past three, about 250 sat down to dinner, in an apartment which had been specially screened off for the purpose. The Chair was taken by the Rev. A. Hume, D.C.L., Honorary Secretary. The principal table was also occupied by the Lord Bishop of Manchester, William Fairbairn, Esq., F.R.S., Rev. Thomas Corser, M.A., Colonel Hamilton, George Scharf, Jun., Esq., Professor Crace Calvert, Joseph Mayer, Esq., F.S.A., Mr. Chaffers, &c. Several sentiments, having special reference to the intellectual progress of Lancashire and Cheshire, were proposed and suitably acknowledged. The company broke up soon after five o'clock, and left the Exhibition by the returning train at seven.

25th July, 1857. SPECIAL GENERAL MEETING.

Visit of the Archæological Institute.

[The Archæological Institute of Great Britain and Ireland held its Annual Meeting this year at Chester, from Tuesday the 21st till Wednesday the 29th July. On the invitation of the Council of the Historic Society, the Members and Associates resolved to visit Liverpool on Saturday the 25th.

The party from Chester, including Lord Talbot de Malahide, and comprising about seventy ladies and gentlemen, arrived at the Landing-stage a few minutes before eleven. Here they were joined by the Council of the Historic Society, who were to direct them in the arrangements of the day; and conducted on board the Satellite steamer, which had been placed at their disposal by the agents of the Cunard Company. The whole party then enjoyed a pleasant sail up the river, during which time the juvenile band of the Orphan Boys' Asylum played several airs.

Arriving at the Garston Docks, carriages were waiting to convey the ladies and gentlemen to Speke Hall, which they had been invited to visit by the proprietor, Richard Watt, Esq. After about an hour spent in examining its architectural peculiarities and antique furniture, they were summoned to a spacious marquee erected on the lawn, where an elegant *déjeuner* was provided. After returning to Garston by the same carriages, and re-embarking, the Satellite proceeded to visit the United States' Frigate Niagara; and by the permission of Captain Hudson and the officers, the Atlantic Telegraph Cable and the arrangements connected with it were examined.

On arriving in Liverpool, some of the party visited St. George's Hall, under the guidance of John Woodruff, Esq.; others Mr. Mayer's Museum, through which they were conducted by the proprietor; and the remainder the Sailors' Home, which was described by J. T. Towson, Esq. A reception-room had been provided at the Adelphi Hotel, which was regarded as the point of reunion; and here a collation was in readiness at half-past five.]

At eight o'clock, a Special General Meeting of the Society, in the form of a Conversazione, was held in the apartments of the Town Hall. These, including lights, had been placed at the disposal of the Society by the Worshipful the Mayor, V.P., *ex officio;*

and the subsequent arrangements were made by the Society. The company in attendance amounted to about 1,000.

The lobbies were decorated with rare green-house plants from the Botanic Garden, and from the orchestra in the large ball-room the banner of the Society was suspended. In other parts of the building, various objects of interest were exhibited. These included models of the proposed approaches to St. George's Hall, model of the Ripley Institution, Lancaster, various architectural drawings and models, curious specimens of naval architecture, a series of Shaksperian characters designed for stained glass, specimens of stained glass, rare illustrated books, illuminated manuscripts, microscopes, stereoscopes, philosophical apparatus, and photographs.

About half-past nine the refreshment-room was thrown open; and J. T. Danson, Esq., V.P., expressed on behalf of the Historic Society the official welcome which they gave in open meeting, to their guests and fellow-labourers. He concluded by proposing "The Health of Lord Talbot de Malahide, and success to the Archæological Institute of Great Britain and Ireland." His Lordship after suitable acknowledgments, proposed "Prosperity to the Town of Liverpool," and subsequently "the Historic Society of Lancashire and Cheshire."

Shortly before the visitors from Chester retired, Mr. Mayer, the Honorary Curator, presented to Lord Talbot, on behalf of the Society, a beautiful mazer bowl. It was made from part of the timber of Prince Rupert's cottage; was inlaid with silver; and surmounted by a suitable inscription. The latter, after expressing his thanks, called for wine, and drank from it for the first time to the sentiment, "The Lancashire Witches."

At eleven o'clock, the military band in attendance played the National Anthem, with which the meeting terminated.

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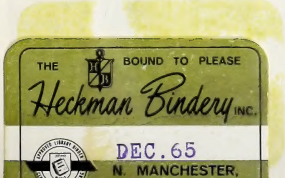
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